



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawaii 96850

In reply refer to:
[1-2-1999-F-02R] HBF

NOV 18 2002

Rodney McInnis
Regional Administrator
National Marine Fisheries Service
Southwest Region
501 West Ocean Blvd., Suite 4200
Long Beach, CA 90802-4213

Subject: Transmittal of the Final Revision of the U.S. Fish and Wildlife Service's November 28, 2000 Biological Opinion for the Effects of the Hawaii-based Domestic Longline Fleet on the Short-tailed Albatross (*Phoebastria albatrus*), Consultation Number 1-2-1999-F-02R.

Dear Mr. McInnis:

We are transmitting the subject final revised biological opinion today, November 18, 2002, as per our agreement with your Pacific Islands Area Office. We have carefully considered the comments and recommendations made by Charles Karnella and Alvin Katekaru during review of several earlier drafts, and incorporated into the final document the majority of these comments. If you have any questions concerning this biological opinion, please contact Holly Freifeld, Fish and Wildlife Biologist, or Marilet A. Zablan, Program Leader for Vertebrate Species Conservation, at telephone (808) 541-3441 or by facsimile at (808) 541-2756.

Sincerely,

PH
Paul Henson
Field Supervisor

cc: Charles Karnella (NMFS PIAO)
Alvin Katekaru (NMFS PIAO)



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Subject: Revision of the U.S. Fish and Wildlife Service's November 28, 2000 Biological Opinion for the Effects of the Hawaii-based Domestic Longline Fleet on the Short-tailed Albatross (*Phoebastria albatrus*), Consultation Number 1-2-1999-F-02R.

Dear Mr. McInnis,

This letter constitutes a revision to the November 28, 2000 Biological Opinion for the Effects of the Hawaii-based Longline Fishery on the Short-tailed Albatross (*Phoebastria albatrus*), FWS Formal Consultation Log Number 1-2-1999-F-02R (November 2000 Opinion). On August 15, 2001, the Fish and Wildlife Service (Service) received a letter from former regional administrator Rebecca Lent to request reinitiation of formal consultation with the National Marine Fisheries Service (NMFS) on the operation of the Hawaii-based pelagic longline fishery. This request was based on the March 30, 2001, court-ordered suspension of shallow-set longline fishing to protect sea turtles. This suspension constitutes a change to the proposed action that may alter the effects of the commercial longline fishery on the short-tailed albatross.

Dr. Lent also requested our consideration of other issues in this reinitiated consultation, as follows:

1. Inclusion in the Reasonable and Prudent Measures (RPMs) of basket-style, tarred mainline gear as an acceptable alternative to weighted monofilament deployed with a line-setting machine. The Service amended the November 2000 Opinion to that effect with a letter on October 18, 2001.

2. Suspension of the non-discretionary requirement that sanma and other fish bait (in contrast with squid bait) be dyed blue. In her letter, Dr. Lent stated that insufficient data exist on the effectiveness of dyed fish bait as a seabird deterrent to warrant its use to reduce risk of incidental take of short-tailed albatross. The Service and NMFS staff agree that a controlled experiment should be conducted to test the use of dyed fish bait as a seabird deterrent. The Hawaii Longline Association (HLA) supports this approach. A research plan for this controlled experiment was provided by NMFS on January 29, 2002, and is incorporated in the new description of the proposed action (Page 9).

3. The observer coverage of a representative number of shallow vs. deep longline sets is no longer tenable because shallow sets are prohibited by court order in the Hawaii-based fishery. This revision includes text that describes the proposed action as changed by the March 30, 2001 court order suspending all shallow set longline operations in the fishery. Subsequent sections of this revision provide a revised Incidental Take statement (Page 18), and revised RPMs and Terms and Conditions (Page 19).

We address these issues in this revised biological opinion; in addition, we update the definition and reporting of “take” of the short-tailed albatross. Please note that rather than reproducing much of the existing biological opinion herein, substantial reference is made to that document instead. Therefore, the complete revised biological opinion consists of the original opinion issued by the Service on November 28, 2000 (1-2-1999-F-02), and this revision.

CONSULTATION HISTORY

March 30, 2001: The United States District Court for the District of Hawaii (Court) issued an Order suspending all shallow-set longlining operations targeting swordfish. This action is one of the various measures of the preferred alternative in the Final Environmental Impact Statement on the Pelagic Fisheries of the Western Pacific Region (March 30, 2001) prepared by NMFS to address the Hawaii longline fishery interactions with sea turtles (NMFS 2001b).

May 18, 2001: In a letter, NMFS requested informal consultation with the Service on proposed research to reduce sea turtle take by a Hawaii-based longline fishery targeting swordfish (hereafter, proposed research). This request included a draft of the section 10 permit application for the take of sea turtles and the research protocols for the experiments (Phil Williams, pers. comm., 2001).

June 12, 2001: NMFS published an emergency interim rule in the *Federal Register* to implement the March 30, 2001 Order issued by the Court to protect sea turtles and implement the terms and conditions of the November 2000 Opinion to protect the short-tailed albatross. Emergency interim measures conform with a biological opinion that NMFS issued on March 29, 2001, which analyzes the effects of the Hawaii longline fishing fleet on sea turtles. One result of this emergency regulation was the suspension of all longline fishing operations that target swordfish.

June 18, 2001: The Secretaries of the Department of Commerce and Interior received from HLA

a 60-day notice of intent to sue (NOIS) for violations of the Endangered Species Act with regard to the formal consultation between the Service and NMFS on the effects of the Hawaii-based longline fishery on the short-tailed albatross (James Lynch, pers. comm. 2001).

June 25, 2001: The Service replied to NMFS May 18 letter with a request for more specific information about 1) how the Terms and Conditions of the November 2000 Opinion would be met in the field protocols for the proposed research, and 2) how fishermen participating in the proposed research would be required to comply with the Terms and Conditions, because the June 12 emergency interim rule implemented the November 2000 Opinion only for deep, or tuna, longline sets.

August 14, 2001: In a letter, NMFS (Endangered Species Division) transmitted an analysis of the effect of the proposed research that included a statement of proposed implementation of the Terms and Conditions of the November 2000 Opinion, a quantitative estimate of incidental take of short-tailed albatross, and a determination that the proposed research was not likely to adversely affect the albatross (Phil Williams, pers comm., 2001).

August 15, 2001: In a letter, NMFS (Southwest Region) requested reinitiation of formal consultation on the effects of the Hawaii-based pelagic longline fishery on the short-tailed albatross. This request was made in light of the changed nature of the action resulting from the June 12 emergency interim rule and in light of new information about the effects of the action (Rebecca Lent, pers. comm., 2001).

August 16, 2001: The Service and NMFS sent a response to HLA's June 18 NOIS acknowledging receipt and disagreeing with HLA's contentions. The letter clarified that 1) the Service's biological opinion on the short-tailed albatross was not arbitrary and capricious, and was based on the best available science and was completed in close collaboration with NMFS, and 2) that NMFS was not out of compliance with the ESA with regard to reinitiating formal consultation with the Service on the short-tailed albatross (Paul Henson and Rebecca Lent, pers. comm., 2001).

September 17, 2001: The Service responded to the August 14 and 15 letters from NMFS. In this letter, the Service did not concur with NMFS' "not likely to adversely affect" finding for the proposed research, agreed to reinitiate consultation on the Hawaii-based longline fishery, and proposed that one consultation be conducted to address both the proposed research and the pelagic longline fishery (Paul Henson, pers. comm., 2001).

September 20, 2001: The Service and NMFS held a teleconference was held to discuss issues involved in the new consultation. Participants included: Service – Paul Henson and Holly Freifeld, NMFS – Rebecca Lent, Phil Williams, Chris Boggs, and Alvin Katekaru.

September 25, 2001: The Service received from NMFS an Administrative Report detailing current efforts to develop a generalized linear model of albatross take by Hawaii-based longline fisheries (Alvin Katekaru, pers. comm., 2001).

September 27, 2001: Service and NMFS biologists met to begin consultation on the proposed research and on the new, tuna-only longline fishery. At this meeting, it was decided to approach both actions in a single consultation and a single, revised biological opinion. During this meeting, NMFS transmitted to the Service a revised analysis of the effects of the proposed research on the short-tailed albatross and the first two 2001 quarterly reports for the Hawaii-based longline fishery. Participants included: Service – Marilet Zablan and Holly Freifeld, NMFS – Chris Boggs and Alvin Katekaru.

September 28, 2001: A teleconference was held to communicate to the Service NMFS' initial concerns and questions about the new consultation. Issues raised included timing of the consultation and the initiation of the proposed research, observer coverage for both the research and the fishery. Participants included: Service – Holly Freifeld, NMFS – Chris Boggs and Alvin Katekaru.

October 4, 2001: A meeting/teleconference was held at the request of the Hawaii Longline Association (HLA) and their legal counsel to discuss HLA's desire to be included by NMFS as an applicant in the new consultation on the commercial fishery. Participants included: Service – Paul Henson, Marilet Zablan, Kevin Foster, and Holly Freifeld, NMFS – Charles Karnella and Alvin Katekaru (NMFS), HLA – James Cook and Sean Martin, Stoel Rives LLP – James Lynch.

October 4, 2001: In an e-mailed document, NMFS transmitted draft text regarding the proposed research for incorporation in the revised Biological Opinion (Chris Boggs, pers. comm., 2001).

October 5, 2001: In a telephone conversation, NMFS requested that the Service provide a rearticulation of the goals of the observer coverage required under the RPMs of the November 2000 Opinion (Alvin Katekaru, pers. comm., 2001).

October 9, 2001: The Service received a phonecall from Chris Boggs (NMFS) to request a separate consultation for the proposed research in light of potential delays in the consultation for the Hawaii-based commercial longline fishery. Therefore, the single consultation on the combined actions was suspended, and two separate consultations were initiated. Information on the proposed action, the Hawaii-based longline fishery, was taken from NMFS' August 15, 2001, letter. Service and NMFS personnel agreed that completion of the consultation on the research should take precedence over the consultation on the commercial fishery.

October 9, 2001: In a letter to the Service and NMFS dated October 8, Stoel Rives rearticulated HLA's request to be included as an applicant in the reinitiated consultation on the commercial fishery, requested consideration of HLA's information regarding the implementation of seabird deterrent measures and other RPMs of the November 2000 Opinion, and transmitted a research plan for testing an underwater line setting chute as a seabird deterrent measure in the longline fishery (a National Audubon Society/HLA collaborative project) (James Lynch, pers. comm., 2001).

It is the responsibility of the action agency (in this case, NMFS) to determine potential applicant

status. The Service did not receive notice from NMFS identifying HLA as an applicant, therefore HLA was not treated as an applicant in this consultation, although we considered information provided by HLA in informal discussions.

October 10, 2001: In an e-mailed document, NMFS transmitted draft text regarding the proposed action (the Hawaii-based longline fishery) for incorporation in the revised Biological Opinion (Alvin Katekaru, pers. comm., 2001).

October 16, 2001: In a letter, NMFS requested initiation of formal consultation on the proposed research under section 7 of the Endangered Species Act (Phil Williams, pers. comm., 2001).

October 18, 2001: Service, NMFS, and HLA personnel and legal counsel met to informally discuss HLA's recommendations for modifying the Terms and Conditions of the November 2000 Opinion. Participants included: Service – Holly Freifeld, NMFS – Alvin Katekaru, HLA – Jim Cook, Stoel Rives – James Lynch (attending by telephone).

October 18, 2001: In a letter, the Service issued an amendment to the November 2000 Opinion to permit the use of tarred mainline basket-style longline gear in lieu of a line-setting machine for deep sets (Paul Henson, pers. comm., 2001).

November 2, 2001: In a letter, HLA advised the Service that they and NMFS were jointly developing a plan to test the effectiveness of one or more seabird deterrents, and suggested that the plan be incorporated in the proposed action (James Lynch, pers. comm., 2001).

November 29, 2001: In a letter, the Service provided a rearticulated description of the goals of the observer coverage required under the RPMs of the November 2000 Opinion (Paul Henson, pers. comm., 2001).

December 12, 2001: The Service transmitted to NMFS the final Biological Opinion (Consultation Log Number 1-2-2002-F-01) on the effects on the short-tailed albatross of the proposed research on sea turtle deterrents (Paul Henson, pers. comm., 2001). Issuance of this biological opinion concluded the consultation initiated on October 16, 2001.

December 12, 2001: In a telephone conversation, the Service responded to a request for information from HLA about possible Service funding for the National Audubon Society/HLA experiment to test an underwater line chute. The Service advised HLA that we awarded \$10,000 to NMFS on September 30 to assist in the implementation of the Terms and Conditions and/or the Conservation Recommendations of the November 2000 Opinion; these funds thus could be used for the underwater line chute experiment (Service – Holly Freifeld, HLA – James Lynch).

December 21, 2001: In a letter, the Service updated NMFS on the reinitiated consultation on the Hawaii longline fishery (Paul Henson, pers. comm., 2001).

January 16, 2002: In a telephone conversation, NMFS communicated to the Service that a plan

was forthcoming for an experiment to test the efficacy of blue-dyed fish bait as a seabird deterrent in the tuna-only longline fishery. NMFS informed the Service that the final rule for publication in the *Federal Register* promulgating fishing regulations would likely not be published until May, 2002, and the formal consultation with the Service could not be concluded until subsequent to publication (Alvin Katekaru, pers. comm., 2002). Therefore, the consultation was temporarily suspended.

January 29, 2002: In a letter, NMFS transmitted to the Service the plan for a blue-dyed fish bait experiment (Michael Laurs, NMFS, pers. comm., 2002).

February 20, 2002: In a telephone conversation, NMFS verified that the blue-dyed fish bait experiment would be incorporated into the proposed action for the revision to the November 2000 Opinion (Alvin Katekaru, pers. comm., 2002).

March 14, 2002: In a telephone conversation, the Service and NMFS agreed that conclusion of this consultation might be delayed until at least May because the timetable was uncertain for NMFS' publishing final regulations implementing the November 2000 Opinion, and because a preliminary report on the results of the underwater setting chute likely would be available before the publication of the final rule (Service – Holly Freifeld, NMFS – Alvin Katekaru).

June 17, 2002: In a telephone conversation, the Service and NMFS discussed what effect the blue-dyed fish bait experiment would have on the revised Terms and Conditions of November 2000 Opinion, and discussed a few other revisions. NMFS suggested that 1) NMFS and the Service meet informally with HLA to discuss the experiment to test the efficacy of blue-dyed fish bait, and 2) new estimates of incidental take of albatross would be prepared by the NMFS Honolulu Lab in July (Service – Holly Freifeld, NMFS – Alvin Katekaru).

June 18, 2002: The Service transmitted to NMFS by email a rough draft of this revised biological opinion for their comments (Holly Freifeld, Service, pers. comm., 2002).

July 26, 2002: Informal discussions were held between NMFS, HLA, and the Service about the experiment to test the efficacy of blue-dyed fish bait as a seabird deterrent. It was decided that the existing blue dye requirement for all bait would remain in place. (NMFS – Charles Karnella, Alvin Katekaru, Christofer Boggs, HLA – Jim Cook, Service – Holly Freifeld).

August 26, 2002: NMFS and Service personnel met to discuss NMFS comments on draft revised biological opinion (Service – Holly Freifeld, NMFS – Alvin Katekaru).

September 20, 2002: In an email message, NMFS transmitted to the Service revised draft text for the Proposed Action section of this revised biological opinion (Alvin Katekaru, NMFS, pers. comm., 2002).

October 14, 2002: In an email message, NMFS transmitted to the Service newly revised draft text, figures, and tables for the Proposed Action section of this revised biological opinion (Alvin

Katekaru, NMFS, pers. comm., 2002).

October 26, 2002: The Service transmitted to NMFS by email a revised draft of this revised biological opinion for their comments, and a timetable for receiving comments and concluding the consultation (Holly Freifeld, Service, pers. comm., 2002).

November 12, 2002: In a memorandum, NMFS transmitted comments on the final draft of this revised biological opinion (Charles Karnella, NMFS, pers. comm., 2002).

See the November 2000 Opinion for the original consultation history.

BIOLOGICAL OPINION

Revisions and additions to the November 2000 Opinion are presented with explanations as necessary under each major heading and subheading in sequence.

I: Description of the Proposed Action

Hawaii-based Pelagic Longline Fishery

The Hawaii-based longline fishery now operates under a final (permanent) rule, described in the *preferred alternative* of a final Environmental Impact Statement (March 30, 2001) on the Management Plan for Pelagic Fisheries of the Western Pacific Region (NMFS 2001b)¹. The rule was adopted by the Western Pacific Fishery Management Council under the authority of the Magnuson-Stevens Fishery Conservation Act, approved by the Secretary of Commerce, and implemented by NMFS. Key sea conservation measures include a prohibition on swordfish-targeted longline fishing north of the equator, a seasonal closure in waters south of the Hawaiian Islands (from the equator to 15°N and 145°W to 180°) during April and May, a ban on the possession of light sticks or other light emitting devices used as lures to attract swordfish, and a trip-limit of 10 on the number of swordfish that are taken by a Hawaii-based longline vessel fishing north of the equator. The definition of swordfish-target or shallow-set longline gear is described in the March 2001 FEIS.

¹A lawsuit filed by the Earthjustice Legal Defense Fund in February 1999, on behalf of the Center for Marine Conservation and the Turtle Island Restoration Network, alleged that NMFS had failed to follow the prescribed National Environmental Policy Act (NEPA) process and challenged NMFS's determinations under the Endangered Species Act (ESA) that the continued conduct of the Hawaii-based pelagic longline fishery was not likely to jeopardize the long-term existence of leatherback, loggerhead, olive ridley, and green sea turtles (Center for Marine Conservation v. NMFS (D. Haw.) Civ. No. 99-00152 DAE (CMC v. NMFS)). On November 23, 1999, the Federal District Court for the District of Hawaii (Court) issued an injunction that led to the temporary closure (via emergency interim rule, 64 FR 72290, December 27, 1999) of certain waters north of Hawaii to fishing by Hawaii-based longline vessels. The injunction also required all vessel operators to follow specific procedures for handling and releasing turtles. These procedures became effective on April 27, 2000, under a final rule promulgated by NMFS (65 FR 16346, March 28, 2000). Subsequent Court orders, including one on June 23, 2000, required NMFS to suspend longline fishing for swordfish, increase observer coverage to 20% of all longline trips (65 FR 51992, August 25, 2000), and prepare an Environmental Impact Statement (EIS).

With respect to the short-tailed albatross, the most important change to the fishery resulting from the sea turtle mitigation measures is this suspension of all swordfish-target or shallow-set longline operations by Hawaii longliners. In addition to the restrictions listed above, the sea turtle measures require all Hawaii longliners to (a) deploy longline gear such that the “sag” (deepest point) between any two floats is at least 100 m (328 ft) below the surface of the water at its deepest point, (b) use a minimum of 15 branch lines deployed between any two floats, and (c) have each float line (one length) at least 20 m (65.6 ft) long.

The Hawaii-based longline fishery is a limited access fishery, with a total of 164 permits that are transferable (Table 1). Vessels active in this fishery are limited to 101 feet in length. The area fished ranges as close as 25 miles from Hawaii to thousands of miles from port. These Hawaii-based longline vessels compete with foreign distant water fishing fleets operating on the high seas. In 2001, 101 Hawaii-based longline vessels made 1,034 trips, almost all of which targeted tunas. Swordfish was a major target species of this fishery prior to 2001, but due to conservation measures to protect sea turtles this segment of the Hawaii-based longline fishery was phased out completely by the end of year. Despite the loss of the swordfish- and mixed-target sectors of the fishery, the tuna sector still managed to produce 15.6 millions pounds of fish (Figure 1) with an ex-vessel revenue of \$33.0 million and remained the largest commercial fishery in Hawaii for 2001. Collectively, tunas made up two-thirds of the landings with bigeye tuna accounting for a third of the total. Swordfish, which had been one of the largest components accounted for 3% of the landings in 2001.

Total landings decreased by 34% in 2001 (Figure 1). Swordfish landings, which dropped by 92%, accounted for almost three quarters of the decrease. Sharks landings also contributed to the decline in total landings as they were off by 91% in 2001. The decrease in shark landings resulted from state and federal laws prohibiting the finning sharks. Landings of tuna, marlins, and incidentally caught miscellaneous pelagic species all remained about the same as the previous year.

Long-term trends show tuna landings increasing gradually from 1987 to 1997 and leveling through 2001. Landings of marlins and miscellaneous pelagic species rose slightly in the late 1980s and changed little in the 1990s. Swordfish landings show significant growth from the late 1980s into the early 1990s followed by a period of consistent volume with a sharp decline in 2001. With the exception of swordfish landings from the four swordfish-target trips sanctioned by the Court-order prior to the implementation of the preferred alternative of the FEIS, all of the swordfish landings in 2001 resulted from incidental catches by the tuna-target segment of the Hawaii-based longline fishery. Shark landings show a more gradual period of increase up until 1999 with a 50% drop in 2000 and further declined to a relatively insignificant level in 2001.

The Hawaii-based longline fishery as it operated until March 2001 is described in great detail in the March 2001 FEIS (Section 3.10.3.1, pages 195 to 256). The fishery has changed substantially since the Court first issued an injunction in December 1999 to temporarily close the Hawaii-based longline fishery in certain waters north of the Hawaiian Islands to protect sea

turtles. The conduct of the fishery has also been affected by sea bird mitigation measures that must be employed when operating north of 23° N latitude (67 FR 34408, May 14, 2002).

The Hawaii-based longline fishery now exclusively targets large tunas for *sashimi* (raw fish) and fresh fish that is sold to local retail and wholesale outlets as well as mainland U.S. and international (Japanese) markets. The effects of these management changes on the Hawaii-based longline fishery are fully discussed in this section.

Hawaii-based Longline Tuna-target (Deep-Set) Gear Configuration

Tuna-target longline fishing is also known as deep-set longline fishing. In general, longline gear consists of a continuous main line that is set on the surface and supported in the water column horizontally by attaching floats². Longline fishing allows a vessel to distribute effort over a large area to harvest fish that are not concentrated in great numbers. Overall catch rates in relation to the number of hooks are generally very low (2% of the hooks set 2001 caught fish). Plastic floats are commonly used though radio buoys are also used to keep track of the mainline. A line shooter is used on deep sets to deploy the mainline faster than the speed of the vessel, thus allowing the longline gear to sink quickly to its target depth (400 m for bigeye tuna). Deep-set longline gear is set in the morning and hauled in the afternoon (Ito and Machado, 2001). The main line is typically 30 to 100 km (18 to 60 nm) long. Branch lines (gangions) are clipped to the mainline at regular intervals between the floats. Each gangion terminates with a single baited hook. The branch lines must be at least 20 m (66 ft) long. *Sanma* (saury) or sardines are used for bait. No lightsticks are attached to the gangions on this type of longline set. A typical tuna-target set (one day of fishing) consists of 1,200 to 1,900 hooks.

Vessel Activity

The Hawaii-based longline fishery is the largest commercial fishery in the western Pacific region, with 101 active vessels in 2001, 24 fewer vessels than the previous year. The decrease was attributed to Hawaii-based longline vessels that went to California to fish for swordfish around the time that turtle conservation and mitigation measures prohibited Hawaii-based longline vessels from targeting swordfish. These vessels that transited to California elected to de-register their vessel from their Hawaii longline limited access permit to be able to continue fishing for swordfish. There were approximately 35 vessels that fished out of California in 2001, almost all which had some history of fishing in the Hawaii-based longline fishery.

The number of active vessels in the Hawaii-based longline fishery increased dramatically in the late 1980s and peaked at 141 vessels in 1991 (Figure 2). The number of vessels has since ranged from 101-125. The longline fishery operates year-round although vessel activity increases

² Under the PFMP, “longline” gear means a mainline 1 mile or longer in length, suspended in the water column, to which are attached branch (also called dropper or gangion) lines with hooks. When used in the longline closed areas around the Northwestern Hawaiian Islands, the definition is the same except that in those areas a “longline” consists of a mainline of any length (i.e., even mainlines less than 1 mile are prohibited).

during the fall and is highest during the winter and spring months.

Number of trips

Hawaii-based longline vessels made 1,034 trips in 2001; down 69 trips from 2000. Trips were categorized on the basis of target species as tuna-, swordfish-, or mixed- (tuna and swordfish) target. There were 987 tuna-target, 43 mixed-target, and 4 swordfish-target trips made in 2001. Tuna-target trips increased by 173 trips while swordfish-target and mixed-target decreased by 33 and 209 trips, respectively from 2000.

As described above, sea turtle conservation and mitigation measures for the Hawaii-based longline fishery ordered by the Court and promulgated via emergency action in 2001, prohibited Hawaii-based longline vessels from targeting swordfish while fishing north of the equator and, therefore, required the fishery to target only tuna. When these measures were implemented, decreases in swordfish-target as well as mixed-target trips were apparent in the latter part of 2001. The measures became permanent in June 2002 (67 FR 40232, June 12, 2002).

The total number of trips for the Hawaii-based longline fishery have remained relatively stable, however, there was a shift from mixed-target and swordfish-target trips to tuna-target trips from the early 1990s into 2001 (Figure 3). Swordfish- and mixed-target trips decreased by 99% and 95% of their original levels when compared to their respective trip activity in 1991. In contrast, tuna-target trip activity increased by 78% in that same period.

Number of hooks set

A record 22 million hooks were set in 2001. This increase in the number of hooks reflects the shift in effort to tuna which typically results in more than twice as many hooks per day fished than swordfish- or mixed-target trips. Most of the hooks were set in the Main Hawaiian Islands (MHI) Exclusive Economic Zone (EEZ)(39%) and on the high seas outside the U.S. EEZ (39%). Hooks set in the U.S. possessions accounted for 13% and was followed by the Northwestern Hawaiian Islands (NWHI) EEZ (9%). Hooks set in the MHI EEZ increased 54% from 2000 while effort in all the other areas remained about the same.

In general, the total number of hooks set did not change much from 1991-94 but rose 86% thereafter (Figure 4). Hooks set in the MHI EEZ throughout 1991-2001 varied with no clear trend of increase or decrease. Hooks set outside of the EEZ increased consistently from 1994-2000 with a decline in 2001. Fewer hooks were set in the NWHI EEZ and EEZ of the U.S. possessions with number of hooks set in NWHI EEZ peaking in 1997 and a increasing trend for hooks set in the EEZ of the U.S. possessions.

The area fished by the Hawaii-based longline fishery in 2001 ranged from the equator to 35°N and from 145°W to 175°W (Figure 5). Effort was highest southwest of the Big Island and east of Johnston Atoll with considerable effort north of the MHI. The effort near Kingman Reef and Palmyra Atoll was slightly higher than the surrounding area.

Catch

Catch by the Hawaii-based longline fishery was composed predominantly of tunas and sharks (Table 2). Tunas and swordfish were targeted while sharks are caught incidentally by this fishery. Catch totals are summarized from daily longline logbook data, which include records of fish kept and fish released.

Tuna catch

Bigeye tuna was the primary target species and the largest component of the catch of the Hawaii-based longline fishery in 2001. Bigeye tuna catch was 78,724 fish, up 6% from the previous year. This is a small increase in bigeye tuna catch considering the additional effort that shifted from swordfish- to tuna-target trips. Most bigeye tuna were caught in the MHI EEZ (47%) and outside the EEZ, (35%)(Table 3). Bigeye tuna catch rose from 1991 and more than doubled by 1998. Catch then dropped 19% the following year and showed minor change thereafter (Figure 6). Bigeye tuna catch is seasonal with the best catches during the fall and winter months.

Albacore catch was the second largest component of the tuna catch with 51,430 fish, up 29% in 2001. Catch of albacore was highest outside the EEZ (54%) and was followed by the main HI EEZ (20%). The catch trend for albacore was similar to bigeye tuna with catches increasing five-fold from 1991 to 1997. Albacore catch showed wide interannual variation from 1997 through 2001 on a slight downward trend. Albacore catch outside the EEZ was responsible for more than half of its total and was followed by the main HI EEZ (20%) and EEZ of U.S. Pacific Remote Island Areas (18%). Albacore catches were slightly higher in the spring and fall.

Yellowfin tuna catch was 37,077 in 2001, slightly below the yellowfin tuna catch of the previous year. Fifty-six percent of the yellowfin tuna catch originated from the EEZ of Pacific Remote Island Areas (PRIA), primarily Kingman Reef and Palmyra Atoll. Waters outside the EEZ contribute about a quarter of the yellowfin tuna catch. Although catch of yellowfin tuna nearly tripled from 1991-2001, catches remain below those of bigeye tuna and albacore.

Billfish catch

Swordfish was the only billfish targeted by the Hawaii-based longline fishery. Swordfish catch was only 4,169 in 2001, down 89 % from the previous year. This decrease is a result of sea turtle conservation and mitigation measures that specifically prohibited Hawaii-based longline vessels from targeting swordfish while fishing north of the equator. Swordfish catch originated primarily from outside of the EEZ (61%). Longlining for swordfish began in the late 1980s and grew rapidly in the early 1990s (Figure 7). Catch from this segment of the Hawaii-based longline fishery peaked at almost 80,00 fish in 1993 and dropped substantially the following year. Catch remained close to 40,000 until the year 2000 then decreased to just a fraction of that level in 2001. Swordfish catch was very seasonal with the highest catches occurring during winter and spring.

Marlins are caught incidentally by the Hawaii-based longline fishery. Striped marlin catch in 2001 was 16,435 fish, with the highest catches in the MHI EEZ. Blue marlin catch was 6,424 fish, with high catches outside the EEZ and in the MHI EEZ. There were seasonal differences between the two marlin species. Striped marlin catches were highest in the fall and lowest in the summer, whereas, blue marlin catches were highest during the spring and summer and lowest during the winter.

Shark catch

Catch of blue shark was 39,441 in 2001 (Figure 8), which represented 84% of the total shark catch. Catches of other species of sharks were small relative to the blue shark catch. Mako, thresher, and other miscellaneous shark catches in 2001 were 1,131 fish, 2,871 fish, and 3,468 fish, respectively. Blue shark catches were consistently highest outside the EEZ.. Ninety-five percent of the sharks caught in 2001 were released. Most of the sharks kept were retained whole. There were about 300 sharks retained for fins in 2001.

Blue shark was typically the dominant catch component of swordfish trips (Ito and Machado 2001) and the levels of catch of this species paralleled that of swordfish, rising and peaking in 1993. Blue shark catch declined slowly after 1994 as swordfish- and mixed-target effort declined.

The percentage of sharks retained (kept for their fins or flesh) increased from 3% in 1991 to 65% in 1999. Most sharks were retained for their fins only. Shark finning activity declined from a peak of 60,000 fish in 1998 to only a few hundred in 2001.

Observer Program for the Hawaii-based longline fishery

The NMFS observer program for the Hawaii longline fishery began in 1990, with the voluntary sampling of fishing operations because of unconfirmed reports of interactions between swordfish vessels and protected species, such as Hawaiian monk seals, sea turtles, and sea birds (Dollar 1991). Subsequently, a mandatory NMFS observer program was established in April 1994 to better characterize and understand the effects of this incidental take in the Hawaii-based longline fishery on sea turtle, seabird, and marine mammal populations. Background information on the observer program and coverage statistics, statistical design, and estimates of turtle take based on observer rates are presented in the March 2001 FEIS (Section 3.12.3, pages 432 to 442), which is incorporated in this biological opinion by reference.

In late 2000, observer services were contracted out on a permanent basis through a private firm, Saltwater, Inc. Since January, 2001, 102 observers have been trained. An experienced corps of observers has emerged from this group, enabling the NMFS observer program, administered by the NMFS Pacific Islands Area Office, to maintain an observer staff ranging from 25 to 40 persons at a given time. Observer retention rates in 2001 and 2002 equaled those prior to contracting observer services.

The observer program maintained coverage levels for the Hawaii-based longline fleet above 20% throughout 2001 and 2002 (Table 4). In the early part of 2002, coverage rates over 30% were attained when monies and personnel became available to the program. NMFS intends to maintain observer coverage rates above 20% at any given time. The NMFS observer program completed four to five times the number of observed trips per year in 2001 and 2002 than in years prior to 2000.

The sampling design for the program changed in 2001. Unstratified random sampling of vessels for observer placement was initiated when the entire fleet converted to targeting tuna in 2001. In May, 2002, a formal systematic sampling scheme, developed by the NMFS Honolulu Laboratory, was implemented to facilitate data analysis.

For additional information on the Hawaii-based longline fishery, refer to the description of the proposed action in the November 2000 Opinion.

Deep Set Basket Longline Gear

A traditional, old-style longline gear used to fish for large tunas called “basket or rope longline gear” is still used in the Hawaii-based longline fishery. Essentially this gear consists of a tarred mainline which is heavy and rapidly sinks to depths of 100 m or more, depending on length of mainline and number of hooks between floats. (see Appendix A of this revision for a detailed description of a basket longline gear) The sink rate of the basket longline gear is estimated to be about 9 m per minute, which is comparable to the sink rate (10 m per minute) of a weighted monofilament line that is deployed by a line-setting machine or line-shooter (Chris Boggs, NMFS, pers comm.). Because of the gear’s rapid sink rate, which is similar to the rate when a line-setting machine is used, the baited hooks are available to seabirds for only a brief time during longline setting operations and seabirds thus are at low risk of incidental take by this gear type. Data compiled by NMFS³ from a Hawaii longliner that uses basket longline gear have shown that the basket longline gear acts as a seabird deterrent device. Therefore, the use of basket longline gear has been added to the terms and conditions of the November 2000 biological opinion through an amendment issued by the Service on October 18, 2001 (Appendix B).

Experimental Use of Blue-dyed Fish Bait

Included in the proposed action is an experiment to test the efficacy of blue-dyed sanma and other fish bait (as contrasted with squid bait) as a seabird deterrent in the Hawaii longline fishery under the new conditions described above. When the experiment is concluded, the results may suggest changes that necessitate an amendment to this biological opinion. This experiment was designed by the NMFS Honolulu Laboratory in collaboration with Hawaii-based longline

³ Based on NMFS longline logbook data from 98 fishing trips and NMFS observer data from three trips.

fishermen.

Although dyeing squid bait blue is documented to be an effective seabird deterrent, squid is not commonly used as bait in the current Hawaii-based tuna longline fishery. At present no statistically significant, compelling data exist either to support or reject the use of blue dye with fish bait as a seabird deterrent, although the few data that do exist (Garcia and Associates 1999) suggest that blue-dyed fish bait may have some deterrent effect. For this reason, blue dye for all bait was required in the November 2000 Opinion.

The design of this experiment requires the participation of Hawaii-based longline vessels in the blue-dyed fish bait trials on all observed fishing trips north of 25°N. It is thought that the likelihood of observing the necessary number of albatross interactions with gear is low between 23°N, the boundary established for implementation of seabird deterrent measures, and 25°N; therefore the southern boundary for this experiment is 25°N. Because the tuna longline fishery presently incorporates the use of line shooters and weighted branch lines in its standard gear configuration, the experiment will quantify any added benefits of using blue-dyed bait. The experiment will compare rates of albatross interactions with blue-dyed and undyed bait fish used by any Hawaii longline vessel that fishes north of 25°N latitude and carries a NMFS scientific data collector or observer to obtain the data. On observed trips, all tuna longline fishermen will use blue-dyed bait fish on alternate days and observers will closely record seabird behavior and interactions with the bait (as described in RPM II.C. of this revised biological opinion). NMFS will establish a standardized protocol for scientific data collectors and observers aboard vessels participating in the experiment to ensure the accuracy and consistency of data collection.

Analysis of past observer data yielded an estimate that the independent efficacy of line shooters and weighted branch lines is high (approximately a 90% reduction in seabird interactions; Garcia and Associates 1999). However, the statistical power of the data to indicate the gear's efficacy is low because very few observed tuna sets had any interactions with albatross. This is in part because these sets took place in areas where few albatross were present. The observed sets using undyed bait in this experiment may provide an improved measure of the efficacy of the standard tuna gear configuration in reducing interactions with albatross by comparison with historical data on swordfish-style sets in the same areas. The critical factor in all of these determinations will be whether enough tuna fishermen will fish during the experiment in locations and during seasons when seabird interactions have historically occurred.

Approximately 60 observations of albatross interactions with longline gear will be necessary to detect a statistically significant ($p < 0.05$), or 50%, reduction in interactions using blue-dyed bait fish (*e.g.*, 40 interactions on undyed bait, 20 interactions on blue-dyed bait). When this number of observations has been reached, an analysis of variance will be conducted using the data to detect a significant difference in seabird interactions with the two different bait types. A reduction in seabird interaction would be measured for the use of blue-dyed bait fish while already using standard longline gear with line setters and weighted branch lines. The sampling design of the experiment should enable the collection of data to determine whether or not tuna longline fishing effort by the Hawaii-based longline fleet is extensive enough to detect

significant reductions in seabird interactions using blue-dyed bait. NMFS will provide a report of the results to the Service for its consideration and use. This report will include a determination by NMFS about the efficacy and recommendations for future use of blue-dyed fish bait in the Hawaii-based longline fishery.

The following are added to the list of conservation measures that have occurred in relation to the Hawaii-based longline fishery that may have benefitted short-tailed albatrosses:

February 2001: NMFS published an extension of the emergency rule of August 25, 2000, closing certain waters to fishing; imposing fishing gear restrictions; effort limitations, and fish sale restrictions, requiring increased observer coverage (66 FR 11120, February 22, 2001).

March 2001: NMFS published an emergency rule notification of closure and clarification of closure requirements (66 FR 153, March 19, 2001).

June 2001: NMFS published an emergency rule establishing longline restrictions and seasonal area closure, and sea turtle and seabird deterrent measures (66 FR 31561, June 12, 2001).

December 2001: NMFS published an extension of emergency rule of June 12, 2001, and allowing the use of basket-style longline gear as an alternative method for deep-set tuna longline fishing (66 FR 63630, December 10, 2001).

February-March, 2002: The National Audubon Society, NMFS, the Hawaii Longline Association, and private consultants jointly conducted an experiment in Hawaiian waters to test the efficacy of an underwater line-setting chute as a seabird deterrent method during longlining operations. NMFS allocated \$8,000 of a \$10,000 award from the Service to this experiment.

April 2002: Dr. Eric VanderWerf, of the Service, presented classroom instruction in seabird identification techniques to new NMFS fisheries observers.

April 2002: NMFS published a 60-day emergency interim rule to suspend all longline fishing operations by Hawaii-registered vessels north of 26°N latitude (67 FR 16323, April 5, 2002).

April 2002: NMFS published a proposed rule that would establish longline gear restrictions, seasonal areas closure, and other sea turtle take mitigation measures (67 FR 20945, April 29, 2002)

May 2002: NMFS published a final rule requiring all vessels registered with Hawaii longline limited entry permits to use measures (including the terms and conditions of the November 28, 2000 biological opinion) to reduce the incidental take of seabirds in the fishery (67 FR 34408, May 14, 2002).

May 2002: In collaboration with the Yamashina Institute (Japan), the Service initiated a satellite telemetry study of short-tailed albatrosses, deploying 10 transmitters on birds at the colony (on

Torishima Island).

June 2002: NMFS published a final rule that implements the reasonable and prudent alternative of the March 29, 2001 Biological Opinion issued by NMFS under the Endangered Species Act (67 FR 40232, June 12, 2002). This rule is intended to reduce interactions between endangered and threatened sea turtle and fishing gear. The rule also reinstates longline fishing north of 26°N latitude, but permits the landing of only 10 swordfish per trip.

July 2002: Dr. Beth Flint, of the Service, presented classroom instruction in seabird identification techniques to new NMFS fisheries observers.

August-September 2002: NMFS held protected species workshops for Hawaii longline vessel owners and operators.

September 2002: Dr. Eric VanderWerf, of the Service, presented classroom instruction in seabird identification techniques to new NMFS fisheries observers.

II: Status of the Species

The status of the species has not changed significantly since the issuance of the November 2000 Opinion, with the exception of the following:

II.C. Population Dynamics

The short-tailed albatross population on Torishima currently is estimated at 1,415, including chicks fledged in 2002 (Hiroshi Hasegawa, Toho University, pers. comm. 2002).

For more information on the status of the species, see text in this section of the November 2000 Opinion.

III: Environmental Baseline

The environmental baseline has not changed significantly since the issuance of the November 2000 Opinion, with the exception of the following:

Breeding Habitat

The active volcano on Torishima began erupting on August 12, 2002. Although the albatrosses' breeding season was over, the effects of this eruption on the colony site, on the next breeding season, and on the abundance and distribution of short-tailed albatrosses in the action area are not yet clear.

Air Strikes

Because of the current changes in visitor use at Midway Atoll NWR, at present air traffic is significantly reduced, and the risk of seabird collision with aircraft is reduced commensurately.

IV: Effects of the Action

The effects of the action have changed in the following manner. See text in the November 2000 Opinion for more information and background.

A. Factors to be considered

Temporal and Spatial Overlap

The following text is added to the end of this section:

On November 4, 2001, in a meeting to review the protected species workshops held by NMFS, NMFS staff stated that two or three fishermen said they had seen a short-tailed albatross during longline trips, but whether these fishermen had correctly identified short-tailed albatrosses is not clear (Karla Gore, NMFS, pers. comm., 2002).

On February 2, 2002 one adult short-tailed albatross was observed flying over the north side of the Tern Island, French Frigate Shoals, by three members of the Hawaiian Islands National Wildlife Refuge staff (Debra Henry, Service, pers. comm. 2002).

Observer Coverage

The following text is added at the beginning of this section:

The March 30, 2001, court decision required an increase in observer coverage to 20% of all Hawaii longline vessels, although this applies to the entire fishery, not only to those trips north of 23°N latitude.

The first paragraph of the section is substituted by the following:

NMFS observers have been deployed aboard Hawaii-based longline fishing vessels since 1994 to collect fishery-related information and to record sightings of marine mammals and turtles (on Protected Species Interactions and Sighting Record forms). Until 2001, the NMFS Hawaii Longline Observer Program Field Manual specifically instructed observers not to record seabird sightings unless birds interacted with the fishing gear (NMFS 1999). In the June, 2001 revised manual, observers are instructed to record no general seabird sightings **except for** sightings of short-tailed albatrosses (NMFS 2001). The probability is remote that short-tailed albatrosses, if present, were noted by observers because until recently observers did not record seabird observations unless birds were in contact with fishing gear, and historically they did not allot a portion of their time to observing seabirds.

Hooks Set Per Unit Time and Trip Type

Information in this section about only tuna or deep-set longline fishing (not swordfish or mixed-set fishing) is relevant to the calculation of estimated take.

B. Analyses for Effects of the Action

The analysis for the effects of the action as presented in the November 2000 Opinion has changed in the following manner. Portions of the text from the November 2000 Opinion are

reproduced and slightly edited here. Please note that the following information in this section of the November 2000 Opinion still is relevant: the range of the short-tailed albatross, observations of the short-tailed albatross, and information about the Laysan and black-footed albatrosses and the rationales for using these as surrogate species in the calculation of the estimated incidental take of short-tailed albatrosses. The primary changes in this section are in the recalculation of estimated incidental take.

The expected, adverse effect of the proposed action is mortality of short-tailed albatrosses. Birds attempting to steal bait may be hooked as the mainline is set, pulled underwater, and drowned. Birds may sustain injuries from interactions with baited hooks during the process of setting and hauling back the main line, which could seriously impair them and result in mortality.

The Service considered different approaches to estimating the number of birds taken by the Hawaii-based longline fishing fleet. In this section we explain why historical levels of take cannot be used to estimate take in this fishery, and explain how we estimate take.

We have determined that short-tailed albatrosses are at risk of injury or mortality from Hawaii longline fishing operations based on the following data points: 1) documented take of Laysan and black-footed albatrosses in the fishery combined with the similarities in foraging behaviors and distributions of Laysan, black-footed, and short-tailed albatrosses, 2) observation of a short-tailed albatross “actively looking for bait on hooks in haulback” behind the NOAA R/V Townsend-Cromwell in 1997, which supported the initial discussions about the need for formal section 7 consultation, 3) the disappearance of “white 000” in 1994 and the possibility of mortality related to the Hawaii-based longline fishery, and 4) repeated sightings of numerous individuals over several months each year in the Northwest Hawaiian Islands, especially Midway Atoll. There are no documented instances of short-tailed albatrosses killed in the Hawaii-based fishery, probably because of a combination of factors, including low observer coverage in the fishery (1994-1999 average coverage: less than 5%), the allocation of observers’ duties during that period, and the fact that short-tailed albatross occurrences are likely to be relatively rare because of their low population numbers world-wide.

The absence of observed and documented takes in the fishery confounds our attempts to estimate the amount of take likely to occur as a result of the action. Historical information is lacking on which to base an estimate of take in the Hawaii-based fishery. Therefore, based on the similarities in foraging behavior between short-tailed, Laysan and black-footed albatross, we considered using the hooking rate of Laysan and/or black-footed albatrosses to estimate the total annual take of short-tailed albatrosses. Although crude, this represents the best available information on the number of short-tailed albatrosses likely to be taken in this fishery until such time that observer coverage of short-tailed albatross interaction with the fishery operations is increased.

Few short-tailed albatrosses exist today and even fewer have been observed in the Hawaiian region. The level of risk this species experiences as a result of Hawaii-based longline fishing activities is difficult to determine because of its low occurrence at fishing grounds frequented by

the Hawaii-based longline fleet. Because of the rarity of the short-tailed albatross, surrogate species may be used to assess the effect of the action (Section 7 Consultation Handbook, p. 4-47). Our knowledge of the foraging behavior of the three species of *Phoebastria* albatross that occur in the North Pacific (which includes the action area), and the existing data collected by NMFS and Garcia and Associates, suggest that 1) these species behave similarly with respect to longline fishing, and 2) a deterrent that is effective for one species is likely to be effective for all three. To use specific data on the behaviors and mortality of Laysan and black-footed albatross, then, is a reasonable and prudent method of assessing and monitoring risk of take and the use of measures to minimize take of short-tailed albatross.

We estimate that throughout the course of one year, about 347 (or 24.5% of the estimated 1,415 of the worldwide population) (H. Hasegawa, pers. comm. 2002; and see November 2000 Opinion, p. 40) short-tailed albatross may be present within the area where the range of the bird overlaps with the Hawaii-based longline fishery (Map 3). We can estimate the number of birds that may be taken as a result of the Hawaii-based longline fishery by comparing the number of short-tailed albatross that may appear in the vicinity of the Hawaii-based longline fishing area with the estimated proportion of black-footed albatross that are killed by the fishery in this same area. We choose to compare the short-tailed albatross with black-footed albatross because both species are larger than the Laysan albatross and may outcompete Laysan albatrosses for food due to their size and behavior. Furthermore, the NMFS observations of short-tailed albatrosses (March 1997 and February 2000) indicate that they were flying by primarily in the company of black-footed albatrosses. In March, 1997 a juvenile short-tailed albatross was observed in the company of about 30 black-footed albatrosses by a NMFS fishery biologist from the R/V Townsend Cromwell; in February, 2000 a juvenile short-tailed albatross was observed in the company of about 10 - 15 black-footed albatrosses by a NMFS fishery observer from a Hawaii-based longline fishing vessel.

The estimated number of individuals in the worldwide population of black-footed albatross is about 277,675 (E. Flint, Service, pers. comm., 2000). This estimate was based on calculations and assumptions (including survivorship and reproductive success) in Cousins and Cooper (2000). Using these methods and assumptions, we determined that there are approximately 138,963 breeders and about 138,712 non-breeders in the population. This estimate is based on the proportion of the black-footed albatross world population (95%) that was counted in 1999.

It is estimated that 6,681-10,219 black-footed albatrosses (sum of 95% prediction intervals calculated for data collected by fisheries observers) were taken by Hawaii-based longliners fishing for both tuna and swordfish between 1994 and 1999⁴. The average annual rate of mortality predicted for the black-footed albatross, in proportion to its population size, and an adjustment for the suspension of shallow-set longlining, are used as proxy variables for determining the risk of incidental take for the rare short-tailed albatross. Shallow set longlining

⁴ Data from NMFS SWFSC Honolulu Laboratory, as cited in WPRFMC (2002). A model of estimated take that includes data collected since 1998, and adjusted for suspension of swordfish-target operations, is not yet available.

was calculated to account for approximately 60% of the estimated take of albatrosses in the fishery (November 2000 Opinion, p. 37).

We estimate that one (1) short-tailed albatross per year may be taken in the Hawaii-based longline fishery, or a total of four over the remaining four-year duration of this consultation. The Service defines take of short-tailed albatrosses to include injury or mortality resulting from interaction with longline gear. Thus, to document take it is not necessary to have a dead bird in hand. The record of a short-tailed albatross interacting with gear and being obviously hooked or killed is sufficient.

The model used in the November 2000 Opinion to estimate take of short-tailed albatrosses by the commercial longline fishery is formalized below. Because short-tailed albatrosses takes have not yet been observed in the Hawaii fishery, the model hypothesized an annual short-tailed albatross take based on the average 1994-1998 annual black-footed albatross mortality, and assumes that the Hawaii fishery affects only the fraction of the short-tailed albatross population that is present within the range of the Hawaii fishery. The model used the following variables:

Fishery take (M) = 0.0066/year Based on the 5-year average of the estimated annual mortality of black-footed albatrosses by the Hawaii-based longline fishery operating without seabird deterrents = 1,831 birds, divided by the estimated population size = 227,675 birds (November 2000 Opinion, p. 41). No adjustment is made for any fraction of the take not observed because of fall-off or removal of hooked birds by sharks or other scavengers.

Availability (A) = 0.245 Fraction of the short-tailed albatross population that overlaps with the Hawaii-based longline fishery (November 2000 Opinion, p. 40).

Population (N) = 1,362 birds Hasegawa's estimate of the short-tailed albatross population (November 2000 Opinion, p. 40).

Therefore the estimated take (T) of short-tailed albatrosses in the Hawaii fishery before 2001 was estimated in the November 2000 Opinion as:

$$T = M * A * N = 2.2 \text{ short-tailed albatrosses per year}$$

To use this model to estimate short-tailed albatross take in the tuna-only Hawaii longline fishery in 2002, we scale down the extent of the proposed action (E) to account for the suspended swordfish fishery that was calculated to take the majority of the estimated 2.2 short-tailed albatrosses in the whole fishery. Ito and Machado (1999) noted a trend of annual increase in the number of tuna hooks set in the fishery since 1991, and this trend apparently is continuing (Chris Boggs, NMFS, pers. comm., 2002). We are unable to predict future increases in the magnitude

of the tuna-target longline fishery, however, and as of this writing no revised model of albatross take by the fishery is available. The calculation below is therefore based on average numbers of albatrosses taken by the fishery between 1994 and 1998.

Extent of the proposed action (E) = 0.007 The proportion of the original estimated take calculated to occur as a result of tuna or deep-set longline operations, based on the 1994-98 average rate per set at which albatrosses were killed in tuna-target sets (0.7%; November 2000 Opinion, p. 37).

Furthermore, we have adjusted (M) to reflect new data on the fall-off or removal (by sharks or other scavengers) of hooked birds prior the haul. Although studies of fall-off in other regions were cited in the November 2000 Opinion, but none had been conducted in the Hawaii-based fishery, and no variable reflecting this fall-off was included in the calculation of incidental take of short-tailed albatrosses. In an experiment to test the efficacy of an underwater line chute conducted in the Hawaii-based fishery in March, 2002, Gilman et al. (2002) found that 34% of birds observed to be hooked during the set were not found on the line when the gear was hauled in.

Fishery take (M) = 0.0121/year Based on the 5-year average of the estimated annual mortality of black-footed albatrosses by the Hawaii-based longline fishery operating without seabird deterrents = 1,831 birds, adjusted by a fall-off or removal rate of 34% = 2774, and divided by the estimated population size = 227,675 birds (November 2000 Opinion, p. 41).

Finally, we have adjusted (N) to reflect the most recent estimate of the short-tailed albatross population:

Population (N) = 1,415 birds Hasegawa's 2002 estimate of the short-tailed albatross population (pers. comm. 2002).

In summary, the equation to estimate take (T) of short-tailed albatross in the Hawaii-based longline fishery is:

$$T = M * A * N * E$$

The resulting estimated incidental take of short-tailed albatrosses in the Hawaii longline fishery is 0.03. Through informal discussions, NMFS and Service staff agreed, in part because these estimates are based on various assumptions, that any fractional results of a quantitative estimate of incidental take should be rounded up to the next whole number. Thus, in this case, we conservatively determine that the Hawaii-based longline fishery may result in the take of one (1) short-tailed albatross per year. This level of take is determined not to jeopardize the continued existence of the species.

This revised estimate for the fishery is substantially less than the incidental take of 2.2 short-tailed albatross per year estimated in the November 2000 Opinion for a fishery that included shallow- as well as deep-set operations.

V: Cumulative Effects

The Service is aware of no additional cumulative effects beyond those described in the November 2000 Opinion.

VI: Conclusion

At the current population level and the current population growth rate, the level of mortality expected to result from this fishery, as the fishery is described under “Description of the Proposed Action,” above, is not likely to jeopardize the species’ continued existence.

Incidental Take Statement

See text in the November 2000 Opinion, with the following changes and additions:

Amount or Extent of Take Anticipated

The following text is substituted for the first two paragraphs in this section:

The Service anticipates that one (1) short-tailed albatross per year may be taken as a result of the Hawaii-based longline fishing activities regulated by NMFS, or a total of four short-tailed albatrosses during period addressed in this consultation, which concludes on December 31, 2006. The incidental take is expected to be in the form of injury or mortality. Because the Service defines take of short-tailed albatrosses to include injury or mortality resulting from physical interaction with longline gear, it is not necessary to have a dead bird in hand to document take. The record of a STAL physically interacting with gear and being hooked and/or obviously killed is sufficient.

The Service expects that documentation of this take may be a rare event because of the incomplete observer coverage (about 20%), but the increase in observer coverage in the past two years and the dedication of a proportion of observers to seabird observation north of 23°N is a significant improvement over historical rates of coverage. The Service considers the observation of a short-tailed albatross in the vicinity of the vessel, actively looking for food, to represent an unknown number or index of short-tailed albatrosses that may be taken in the Hawaii-based longline fishery. Given NMFS’s historical low level of observer coverage and the absence of reported observed takes of short-tailed albatrosses by the Hawaii longline fishery, the Service is not able to calculate the rate at which short-tailed albatrosses forage for bait on hooks or “strike a hook,” and the number that these observations may represent in terms of birds actually killed or injured. Because an interaction is a behavior that has been documented to precede take in the form of injury or mortality in Laysan and black-footed albatrosses, such interactions must be recorded, although for the purposes of this biological opinion an interaction **does not** constitute a take of a short-tailed albatross. In the Reasonable and Prudent Measures, below, we include a

requirement for specific observer duties that we believe will begin to address the dearth of information about the presence and behavior of short-tailed albatrosses in the areas where the Hawaii-based fishery operates.

Effect of the Take

The following text is substituted:

The Service has estimated that one (1) short-tailed albatross per year, or four short-tailed albatrosses for the four-year period of this consultation (until December 31, 2006), may be taken as a result of the proposed action. This estimate is based on certain assumptions relative to the bird’s behavior and distribution in the area of the Hawaiian islands and its possible interaction with the Hawaii-based longline fishery.

The Service does not believe that this level of take is likely to result in jeopardy to the species, nor will it result in destruction or adverse modification of critical habitat, as critical habitat is not designated in the project area.

Reasonable and Prudent Measures

See text in the November 2000 Opinion.

Terms and Conditions

The Terms and Conditions of this consultation have changed somewhat in response to the changes to the proposed action. See November 2000 Opinion for more information. The following changes and additions are applied:

Terms and conditions apply only to deep-set, or tuna, longline operations. Reference to shallow, mixed, or swordfish sets are not relevant at present.

I.A. Seabird Deterrent Measures:

Summary of Seabird Deterrent Measures by Set Type (NMFS Defined)

Seabird Deterrent Measure	Tuna (Deep) Sets
Thawed Baits	Required
Blue Dyed Baits	Required for all baits except control sets in accordance with design of experiment described under “Description of Proposed Action”
Strategic Offal Discharge	Required

Line Setting Machine with weighted branch lines (minimum weight = 45gm) or use of tarred mainline, basket-style gear deployed slack	Required
Night Sets	Optional
Towed Deterrent	Optional

I.A.(1).

a). Blue-dyed and thawed bait (Mandatory):

- i. All bait in all longline operations conducted by Hawaii-based vessels must be completely thawed before each set.
- ii. An adequate quantity of blue dye must be maintained on board all vessels. Only bait dyed a color that conforms to WPRFMC/NMFS standards may be used. All bait (except fish bait used for control sets during the experiment)⁵ must be dyed blue before the longline is set.

II.A. Annual Reporting: The reporting requirements and schedule remain the same, with the following addition:

An interim report on the results of the blue-dyed fish bait experiment will be due within three months following the completion of the first experimental fishing trip. The final report on the results of this experiment will be due within six months following the end of the experiment.

II.B. (1). Gradual Observer Coverage Implementation:

The following two paragraphs are substituted for the original paragraphs in this section.

There will exist two sources for the collection of albatross data and observations.

Observer Coverage for short-tailed albatross and other endangered species: This coverage will be provided by NMFS observers whose primary duties will be to observe short-tailed albatross and other endangered species during sets and haulbacks. Fishery-related activities will be considered a secondary duty and may be performed when observer duties for short-tailed albatross and other endangered species are completed. Duties of observers on board all vessels participating in the blue-dyed fish bait

⁵Longline vessels operating north of 23°N latitude but not participating in the blue dye experiment still are required to use blue-dyed bait. The existing data, while not representing large sample sizes, do suggest some efficacy of blue-dyed fish as a seabird deterrent (Garcia and Associates 1999). It is therefore a prudent precaution to follow the terms and conditions for blue dye established by the November 2000 Opinion, with the exception of control sets in the experiment, for the duration of the experiment. Furthermore, no new information is available to support alteration of this requirement at this time. At the conclusion of the experiment and upon review of the data, NMFS may request reinstitution of consultation based on the results.

experiment will fall in this category. Observer Coverage for other endangered species and fishery related activities: This coverage will be provided by NMFS observers whose primary duties involve observing other endangered species and conducting fishery related activities during sets and haulbacks. Given their commitment to these primary duties, observers will monitor sets and haulbacks for short-tailed albatross as a secondary duty, to the maximum extent practicable. However, if a short-tailed albatross is sighted, all observers on all vessels should watch the bird and record its behavior until it is no longer visible.

NMFS shall provide observers whose primary duty is to observe short-tailed albatross and other endangered species, for at least 5 percent of all Hawaii-based longline fishing trips that occur above 23°N latitude, including all trips that are part of the blue-dyed fish bait experiment. Observer coverage focused on short-tailed albatrosses and other endangered species shall remain at this level, five percent.

II.C. Short-tailed Albatross Observer Duties:

These duties apply to both types of observers as described in II.B.(2) and (3). NMFS shall deploy observers aboard Hawaii-based longline fishing vessels with the responsibility of recording seabird behavior and interaction with longline gear during the period of this consultation. In each class/cohort of fisheries observers trained at PIAO, NMFS in collaboration with Service personnel, will identify qualified biologists that have received training or experience in ornithology, or extensive seabird observation experience, with emphasis on seabirds of the Pacific. NMFS will ensure that these observers will be deployed on Hawaii-based longline fishing vessels during regularly scheduled fishing trips at the rate described in II.B. above. If a trip is terminated prematurely, the observer will be placed aboard another Hawaii-based longline fishing vessel as soon as possible. Observers will be placed on vessels that conduct a majority of their fishing operations within the known range of the short-tailed albatross. Observers will be placed aboard Hawaii-based longline fishing vessels beginning with the implementation of seabird mitigation regulations for this fishery.

NMFS observers shall record sightings and behavior of short-tailed, Laysan and black-footed albatrosses during the set and haulback of the main line. Observers will record seabird sightings and behavior in the vicinity of the longline gear during longline setting operations, until the observer deems that seabirds are no longer observed in the vicinity of the deployed fishing gear, or in the case of night sets, that the observer can no longer distinguish between seabird species. Similarly, observers will record seabird sightings and behavior in the vicinity of longline gear during longline haulback operations, until the observer deems that seabirds are no longer observed in the vicinity of the fishing gear being retrieved.

NMFS observers shall monitor sightings of short-tailed, Laysan, and black-footed albatrosses on or near longline gear. NMFS observers will consider observations and takes of short-tailed albatross, and the observation of other threatened or endangered

species, to be their first and second priorities, respectively, over other observer duties. Observers aboard vessels participating the blue-dyed fish bait experiment will consider observation of short-tailed, Laysan, and black-footed albatrosses, and other seabird species, to be their top priority, and observation of other protected species to be their second priority. The observer will record the behavior of the short-tailed albatross and other seabirds observed, describing their location in relation to the longline gear, and whether they attempt to strike at the gear to “steal bait,” and whether they are either hooked onto or injured by the gear. The observer will record their behavior, the species of each bird that attempts to strike at fishing gear, and record the number of strikes at the fishing gear per set and per haulback. The observer will record the number of albatrosses, by species, that are hauled back on longline gear. The observer will record whether the albatross was killed or injured during the haulback. If the albatross was recorded as injured, the observer will describe the extent of the injury to the best of their ability. In addition to the above-mentioned information, written reports will include: the date of the set, the type(s) of seabird deterrent measures used, weather conditions (wind velocity, visibility, and sea state), time set began and ended, latitude and longitude the set began and ended, number of hooks set, bait type (and whether it was frozen or thawed), amount of weight on hooks, number of birds within the vicinity of the vessel at the beginning of the set, bird behavior before and during set, time haulback began and ended, latitude and longitude haulback began and ended, a record of the number of birds, by species, touching the gear and their fate and condition. In the event a short-tailed albatross is taken, the handling guidelines (Appendix C) will be followed.

Written reports from the NMFS observer program will be submitted quarterly to: Field Supervisor, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office; 300 Ala Moana Boulevard; Room 3-122, Box 50088; Honolulu, Hawaii 96850; facsimile (808) 541-3470; telephone (808) 541-3441. In the event that a short-tailed albatross is either taken or sighted, a written report containing all of the information described above will be submitted to the same address within 60 days of the event or 14 days of the return of the vessel to port, whichever comes first. If a short-tailed albatross is taken, all details regarding the bird (as recorded on the short-tailed albatross recovery sheet; see Appendix C) will be included in this report.

III.A. Short-tailed Albatross Handling Guidelines:

This section is augmented to include the complete revised handling guidelines (see Appendix C of this revision).

CONSERVATION RECOMMENDATIONS

The list of recommendations that appears in this section is augmented as follows:

(5) Underwater setting chute

(A) NMFS should encourage Hawaii-based longline vessels to carry an underwater setting chute in addition to a line-setting machine (vessels may require retrofitting to use the

chute). If a chute is used, its specifications should be comparable to those of the chute used in the experiment conducted 21 February to 10 March, 2002, and the chute should be used in the same manner as it was during this experiment (Gilman et al. 2002). In coordination with the Hawaii Longline Association, NMFS should provide information and training on the correct use of the chute. If a chute is used, it may be used to deploy all branch lines with baited hooks for the entirety of each set during the trip. NOTE: Longline vessels participating in the blue-dyed bait experiment may not use an underwater setting chute during experimental operations.

The underwater setting chute has been shown to be a highly effective seabird deterrent. No seabirds were hooked during sets that employed the chute during the 2002 experiment (Gilman et al. 2002); when used correctly and consistently the chute likely is far more effective than any other seabird deterrent measure. The underwater setting chute ultimately should be considered as a required measure to minimize the risk of incidental take of the short-tailed albatross. The chute is not yet commercially available, however, and no standardized training for its deployment and use has yet been established.

(B) NMFS should support the development by stakeholders of commercially available underwater setting chutes for use by the Hawaii-based longline fleet. NMFS also should develop standardized training materials for the use of the chute and a program for training vessel operators and crews once the chute becomes commercially available.

(C) To increase industry incentives to voluntarily use the underwater setting chute, NMFS should support continued field trials and performance assessment of the chute in relation to bait retention and CPUE. Such efforts would have the benefits of demonstrating that i) the chute performs consistently in a range of environmental conditions, on different fishing grounds, and using a range of gear configurations; ii) the chute is economically advantageous to fishers; and iii) the chute does not require major changes to existing longlining methods. These trials and assessments should not require control sets that increase the risk to protected species.

(D) Once the setting chute is used commonly and voluntarily in the fishery, NMFS should consider promulgating regulations to require its use in all Hawaii-based longline operations.

(6) NMFS should encourage the development and trial of new seabird deterrents.

REINITIATION NOTICE

This concludes reinitiated formal consultation on the Hawaii-based longline fishery as regulated by NMFS. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) in the event of a major population decline as a result of a natural environmental catastrophe or oil spill, in which case the effects of longline fisheries on short-tailed albatross could be seriously exacerbated; (4) agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (5) a new species is listed or critical habitat designated that

may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Other than the changes and additions presented above, other text and terms and conditions outlined in the November 28, 2000 Biological Opinion remain the same. We appreciate the ongoing collaboration of NMFS with the Service on the completion of this reinitiated consultation. We look forward to learning about the progress of the blue-dyed bait experiment and reviewing your results after the

experiment is concluded. If you have any questions, please contact Fish and Wildlife Biologist Holly Freifeld by telephone at (808) 541-3441.

Sincerely,

Paul Henson
Field Supervisor
Ecological Services

Attachments

cc: Charles Karnella, NMFS PIAO
Alvin Katekaru, NMFS PIAO

LITERATURE AND REFERENCES CITED

The following references are added to the list that appears in the November 2000 Opinion:

Gilman, E., C. Boggs, N. Brothers, J. Ray, B. Woods, K. Ching, J. Cook, S. Martin, and D. Chaffey. 2002. Performance Assessment of an Underwater Setting Chute to Minimize Seabird Mortality in the Hawaii Pelagic Longline Tuna Fishery. Draft Final Report--Peer Review Version. To be submitted to U.S. Fish and Wildlife Service in fulfillment of Endangered Species Act and Migratory Bird Treaty Act permit conditions. Honolulu, HI, USA. 54 pp.

Ito and Machado 2001. Annual Report of the Hawaii-Based Longline Fishery for 2000. Administrative Report H-01-07, December 2001. Southwest Fisheries Science Center.

National Marine Fisheries Service (NMFS). 2001(a). Biological opinion/formal Endangered Species Act section 7 consultation on the fishery management plan for the pelagic fisheries of the western Pacific region: impacts of the Hawaii-based longline fishery on listed sea turtles.

_____. 2001(b). Final Environmental Statement: Fishery Management Plan for Pelagic Fisheries of the Western Pacific Region. March 30, 2001.

_____. 2001(c). Hawaii Longline Observer Program Field Manual. Southwest Region, Pacific Islands Area Office, Honolulu, Hawaii.

_____. 1999. Hawaii Longline Observer Program Field Manual. Southwest Region, Pacific Islands Area Office, Honolulu, Hawaii.

Western Pacific Regional Fishery Management Council (WPRFMC). 2002. Measures to Reduce the Incidental Catch of Seabirds in the Hawaii Longline Fishery: A Framework Adjustment to the Western Pacific Pelagic Fisheries Management Plan. Revised February 1, 2002. WPRFMC, Honolulu, Hawaii.

Table 1. Summary Information on the Hawaii-based Longline Fishery, 2001. Source: NMFS, unpublished data.

Area Fished	U.S. EEZs around Hawaii and PRIA; high seas in the central and mid-North Pacific region
Total Landings	15.6 million pounds
Target Species	Bigeye tuna, Albacore, and Yellowfin tuna
Composition of Landings (Major PMUS)	34% Bigeye tuna 18% Albacore 14% Yellowfin tuna 13% Marlins 3% Swordfish

Season	Year round but highest during the fall and winter
Active Vessels	101
Total Permits	164 (transferable, limited entry)
Total Trips	1,034
Total Ex-vessel Value	\$33.0 million

Figure 1. Landings by the Hawaii-based longline fishery, 1991-2001. Source: NMFS unpublished data.

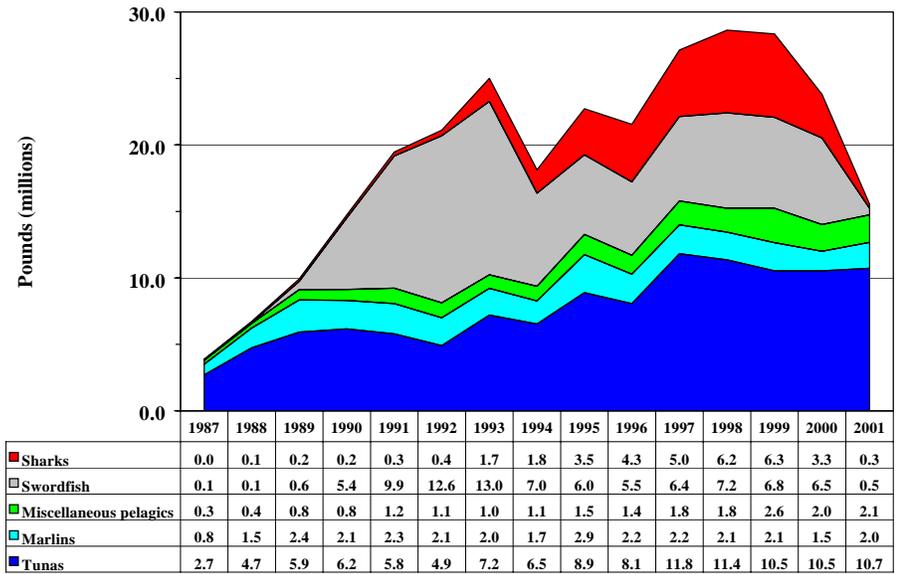


Figure 2. Number of active Hawaii-based longline vessels, 1987-2001. Source: Ito and Machado 2001, NMFS unpublished data.

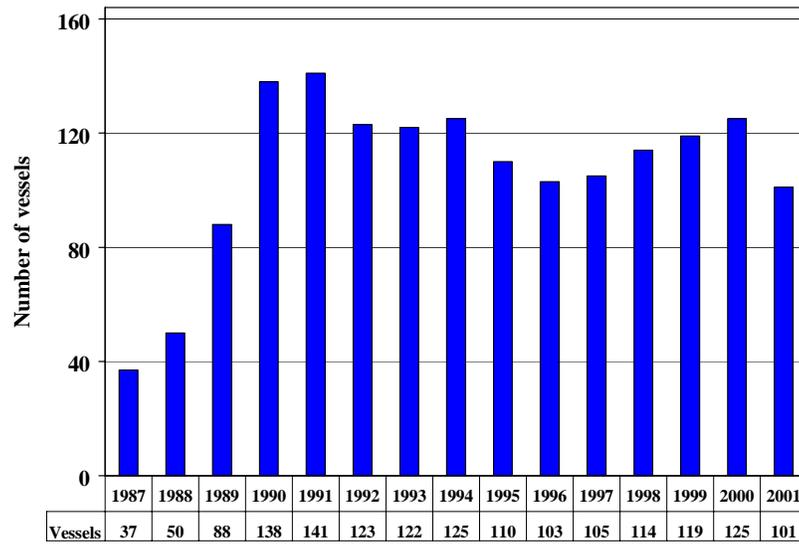


Figure 3. Number of trips in the Hawaii-based longline fishery, 1991-2001. Source: Ito and Machado 2001, NMFS unpublished data.

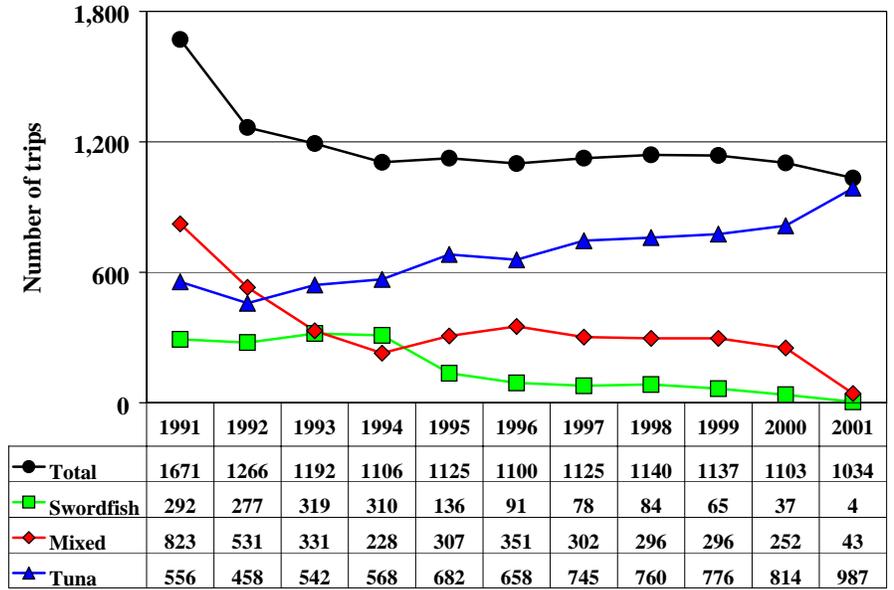


Figure 4. Number of hooks set by area, 1991 - 2001. Source: Ito and Machado 2001, NMFS unpublished data.

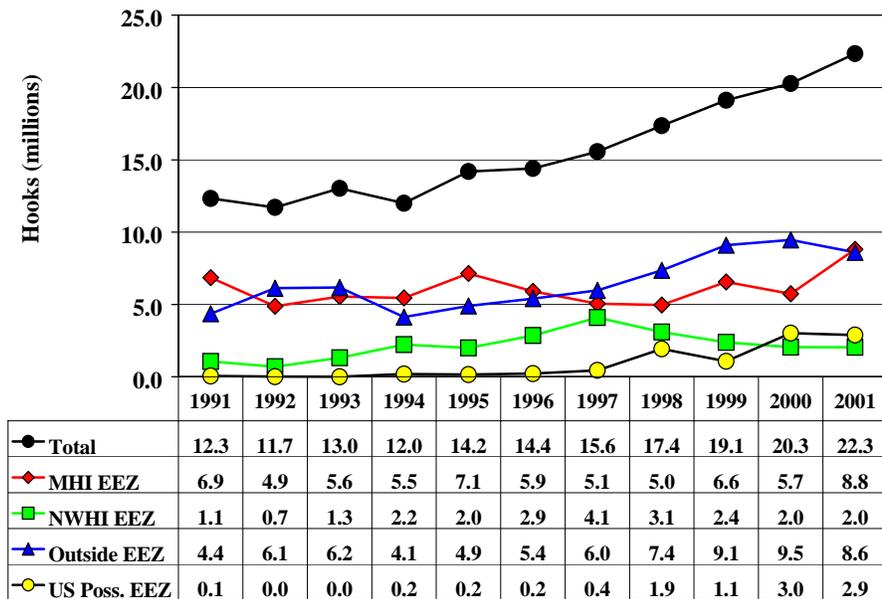


Figure 5. Number of hooks set by area, 2001. Source: NMFS unpublished data.

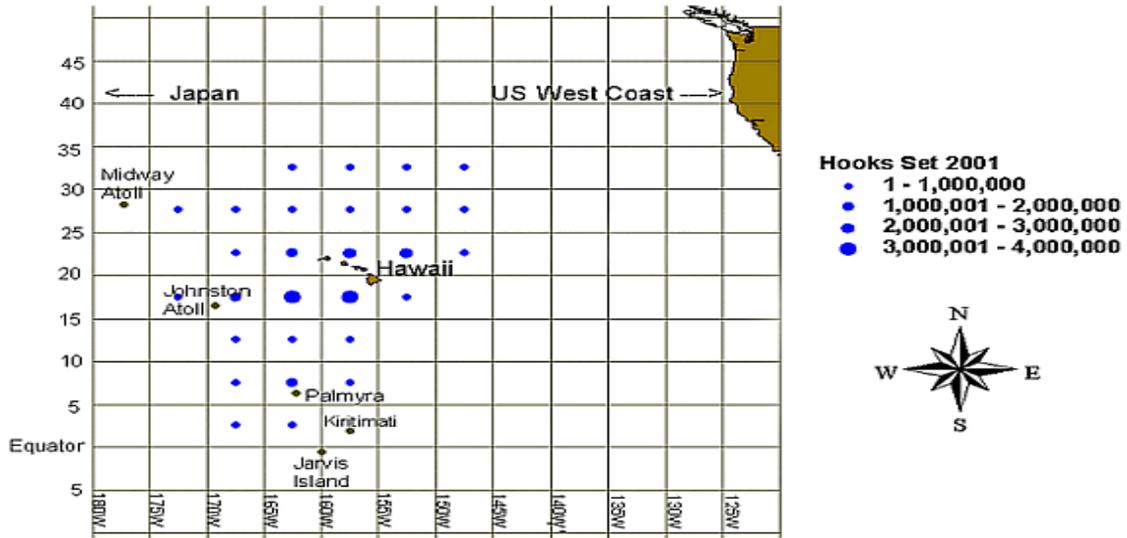


Table 2. Hawaii-based longline catch* (number of fish), 1991-2001. Source: Ito and Machado 2001, NMFS unpublished data.

Year	<u>Billfish</u>				<u>Tunas</u>			<u>Miscellaneous</u>			
	Swordfish	Blue marlin	Striped marlin	Other billfish	Bigeye tuna	Yellowfin tuna	Albacore	Mahimahi	Ono	Opah	Sharks
1991	66,289	4,012	26,967	12,464	40,923	13,269	14,051	39,525	2,735	3,079	71,183
1992	74,314	4,518	16,049	5,668	43,904	7,879	19,813	56,684	2,448	3,293	94,897
1993	79,554	5,124	18,210	5,681	54,803	16,062	30,460	26,018	4,442	4,515	154,608
1994	43,345	4,677	11,292	5,117	48,102	13,516	31,129	33,017	2,513	5,090	114,656
1995	37,428	8,806	22,554	11,771	59,947	23,650	45,789	59,813	6,565	6,367	101,292
1996	38,225	6,685	15,789	7,806	63,575	17,586	57,329	23,311	4,461	7,315	100,992
1997	39,682	8,255	12,637	9,024	79,784	29,045	71,084	49,319	8,312	8,254	85,838
1998	43,776	5,350	14,347	11,516	98,795	21,721	48,833	22,183	8,281	9,184	99,919
1999	37,974	4,936	14,417	17,111	80,332	16,970	67,303	44,349	10,278	12,399	87,576
2000	37,023	4,509	7,939	9,011	74,493	38,379	39,775	57,775	7,751	7,036	79,363
2001	4,169	6,424	16,435	9,004	78,724	37,077	51,430	44,951	13,381	7,779	46,911

Table 3. Hawaii-based longline catch* (number of fish) by area, 1991-2001. Source: Ito and Machado 2001, NMFS unpublished data.

Year	Billfish				Tunas			Miscellaneous			
	Swordfish	Blue marlin	Striped marlin	Other billfish	Bigeye tuna	Yellowfin tuna	Albacore	Mahimahi	Ono	Opah	Sharks
<u>Main Hawaiian Islands EEZ</u>											
1991	13,598	2,881	18,117	8,197	22,517	7,150	5,763	17,672	1,885	2,569	13,295
1992	7,102	2,761	9,838	3,368	22,982	3,846	3,979	13,313	1,194	2,387	11,748
1993	4,388	2,720	10,426	3,440	25,031	8,895	6,496	9,366	2,641	3,261	12,955
1994	2,842	3,344	6,494	3,213	27,022	6,815	10,833	17,660	1,332	3,626	14,455
1995	5,262	4,168	12,472	6,900	31,899	13,018	18,271	30,410	2,656	4,041	22,560
1996	4,634	3,556	7,163	3,404	29,803	7,715	19,259	11,676	1,527	3,094	19,418
1997	4,873	4,085	4,193	3,662	21,397	10,982	19,025	11,660	2,525	2,847	16,476
1998	4,721	1,698	4,856	4,254	26,723	4,678	12,482	7,664	2,305	3,585	14,685
1999	2,357	1,709	5,607	6,691	29,203	4,835	23,805	11,654	2,579	5,161	17,449
2000	2,510	1,557	2,438	3,486	21,546	5,240	5,952	17,586	1,201	2,759	16,561
2001	1,027	2,151	7,651	4,029	36,928	5,671	10,448	21,608	3,223	3,404	16,086
<u>Northwestern Hawaiian Islands EEZ</u>											
1991	9,472	342	3,845	1,082	4,473	1,375	481	2,003	134	70	10,604
1992	5,228	244	1,776	330	2,624	396	311	2,321	77	187	9,042
1993	9,565	509	2,861	754	7,760	2,019	1,413	2,279	198	398	17,507
1994	9,752	554	2,679	719	10,726	2,015	5,592	3,037	227	707	28,346
1995	8,400	1,379	5,076	1,557	9,011	3,630	5,097	5,836	902	939	19,915
1996	3,987	1,114	4,184	1,651	15,409	2,451	12,738	1,995	659	2,388	16,539
1997	5,148	1,519	4,109	2,250	30,168	5,139	17,118	6,321	1,789	2,887	17,921
1998	10,611	1,217	5,757	2,927	16,629	2,713	6,802	3,527	761	1,862	20,152
1999	6,182	1,053	3,515	2,400	9,672	1,581	6,261	4,316	763	1,431	15,150
2000	6,679	418	2,309	1,082	7,660	1,395	2,969	6,458	224	750	11,446
2001	373	761	2,528	882	8,521	1,169	3,648	3,923	783	1,030	5,478
<u>U.S. Possessions</u>											
1991	25	17	60	45	374	439	30	84	21	0	237
1992	16	7	1	7	70	42	0	6	8	0	223
1993	---	---	---	---	---	---	---	---	---	---	---
1994	53	37	173	55	1,127	1,649	151	37	77	24	705
1995	21	94	121	94	460	583	296	252	206	5	895
1996	17	86	192	93	766	1,184	1,612	49	155	57	756
1997	33	194	255	293	2,070	1,932	4,054	591	328	206	1,503
1998	174	308	307	450	17,666	6,313	3,784	831	1,127	258	5,892
1999	102	315	438	619	4,514	5,737	4,514	542	1,499	179	3,463
2000	234	762	733	916	7,483	21,788	8,766	1,202	1,916	448	8,307
2001	224	1,072	1,047	683	5,563	20,777	9,493	1,705	2,150	277	5,195
<u>Outside EEZ</u>											
1991	43,194	1,008	6,730	3,511	13,559	4,305	7,777	19,766	695	440	47,047
1992	61,968	1,506	4,434	1,963	18,228	3,595	15,523	41,044	1,169	719	73,884
1993	65,601	1,895	4,920	1,486	22,008	5,147	22,551	14,367	1,600	856	124,139
1994	30,698	742	1,946	1,130	9,227	3,037	14,553	12,283	877	733	71,150
1995	23,745	3,165	4,885	3,220	18,577	6,419	22,125	23,315	2,801	1,382	57,922
1996	29,495	1,878	4,250	2,658	17,588	6,227	23,719	9,507	2,116	1,776	64,081
1997	29,627	2,457	4,080	2,819	26,149	10,990	30,887	30,730	3,668	2,314	49,935
1998	28,269	2,125	3,408	3,872	37,762	8,004	25,621	10,157	4,068	3,462	59,180
1999	29,323	1,857	4,857	7,401	36,883	4,817	35,659	27,743	5,435	5,628	51,475
2000	27,600	1,772	2,459	3,527	37,804	9,956	22,088	32,529	4,410	3,079	43,049
2001	2,545	2,440	5,209	3,414	27,712	9,460	27,841	17,715	7,225	3,068	20,152

*Based on date of haul from NMFS logbooks.

Figure 6. Tuna catch by the Hawaii-based longline fishery, 1991-2001. Source: Ito and Machado 2001, NMFS unpublished data.

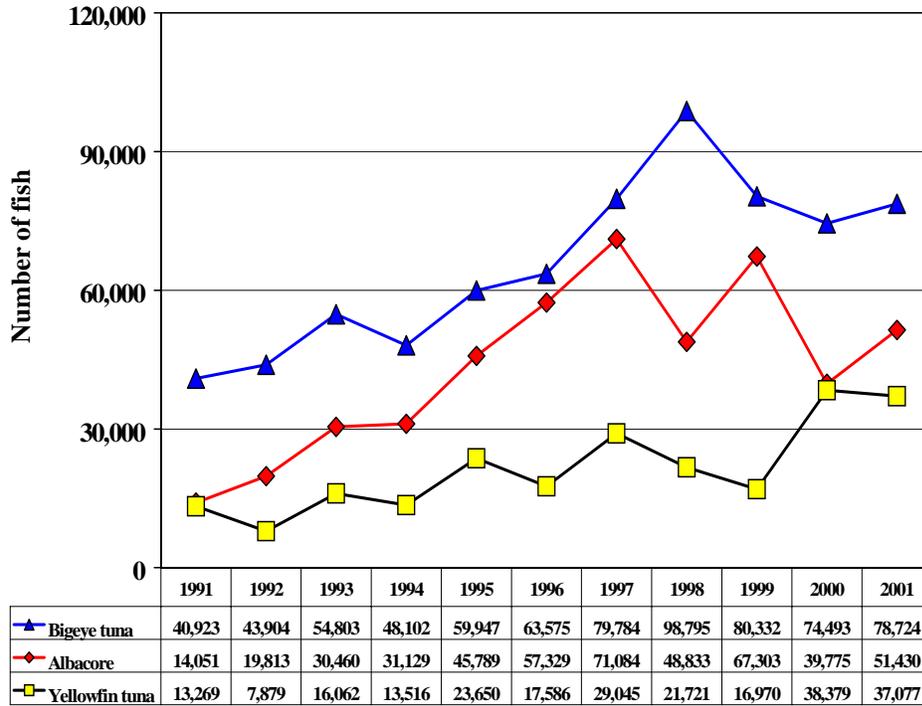


Figure 7. Billfish catch by the Hawaii-based longline fishery, 1991-2001. Source: Ito and Machado 2001, NMFS unpublished data.

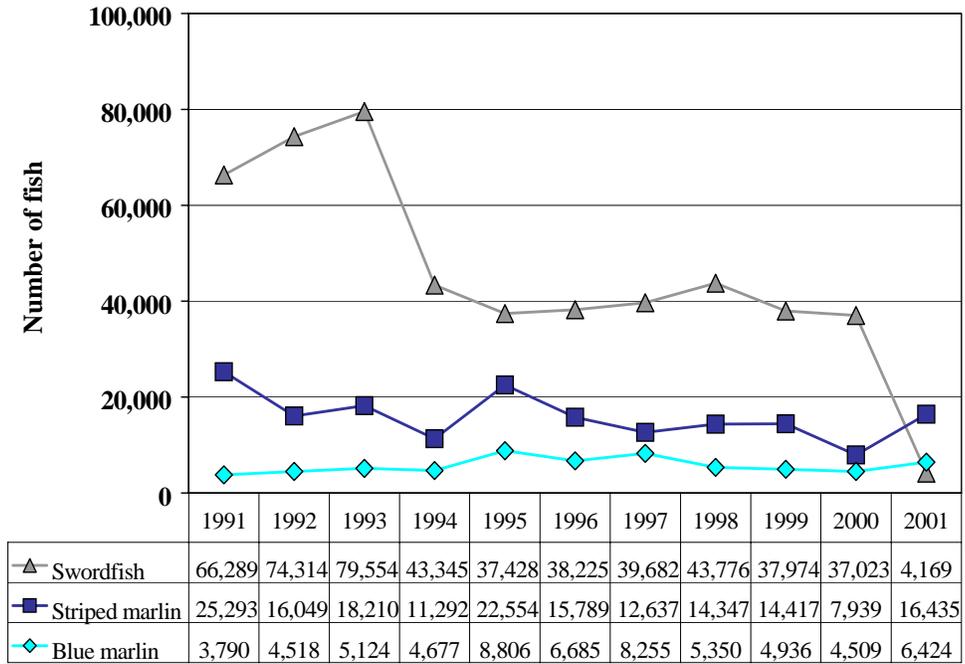


Figure 8. Shark catch by the Hawaii-based longline fishery, 1991-2001. Source: Ito and Machado 2001, NMFS unpublished data.

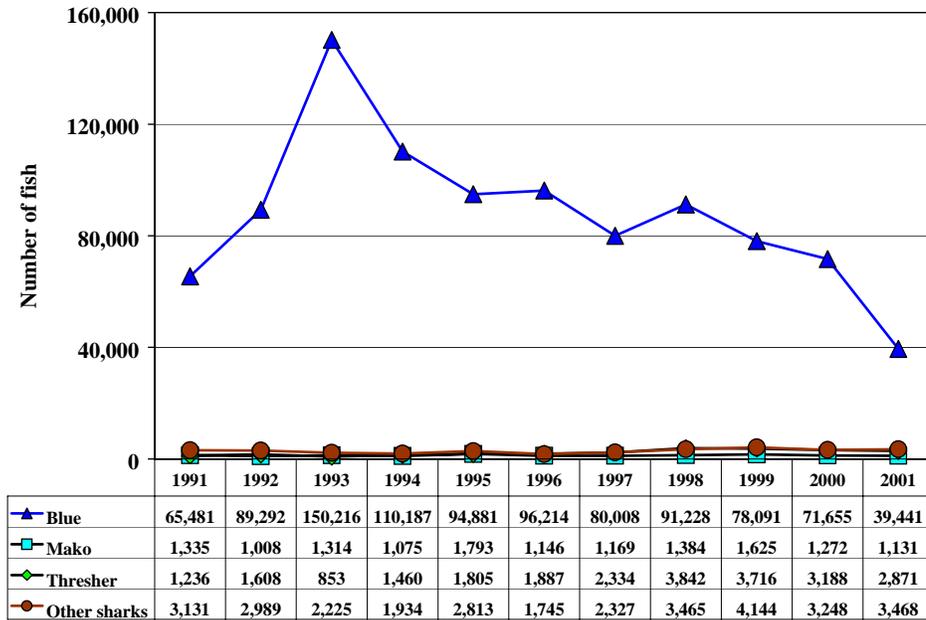


Table 4. Selected Performance Measures for the Hawaii Longline Observer Program, 1994 to 2002. (NMFS unpublished data)

Year	Number of Trips ¹	Observed Number of Trips ²	Percent Coverage ³
1994 ⁴	1031	55	5.3%
1995 ⁵	937	42	4.5%
1996	1,062	52	4.9%
1997	1,123	40	3.6%
1998	1,180	48	4.1%
1999	1,136	38	3.3%
2000	1,134	118	10.4%
2001	1,035	233	22.5%
2002 ⁶ (9 months)	801	221	27.6%

¹ Based on dock-side information obtained by NMFS.

² Completed number of trips.

³ Observer coverage based on number of observed trips and dock-side information.

⁴ Data from March 1994 to February 1995.

⁵ Data from February through December 1995.

⁶ Data from January through September 2002.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawaii 96850

In Reply Refer To: [1-2-1999-F-02] HBF

Rebecca Lent, Ph.D.
Regional Administrator
National Marine Fisheries Service
Southwest Region
501 West Ocean Blvd., Suite 4200
Long Beach, CA 90802-4213

Dear Dr. Lent,

This letter constitutes an amendment to the November 2000 Biological Opinion for the Effects of the Hawaii-based Longline Fishery on the Short-tailed Albatross (*Phoebastria albatrus*), FWS Formal Consultation Log Number 1-2-1999-F-02 (Opinion). The Fish and Wildlife Service (Service) received your August 15 written request to include the use of basket-style, tarred mainline gear in the Reasonable and Prudent Measures (RPM) of the Opinion as a method of deep-set longline fishing that minimizes the incidental take of short-tailed albatross. In your letter, you state that this gear type sinks faster than monofilament line, and that this rapid submergence “virtually eliminates” the risk of incidental take of seabirds during gear deployment.

Along with your request, we received logbook and observer data from the single vessel in the fleet that now uses the basket-style gear. These data record no albatross taken during fishing operations that employ this gear type. In addition, we have received information verifying that this gear type, when deployed slack, sinks at approximately 9 m/minute through the first 50 vertical meters of the water column, a speed almost as great as monofilament gear deployed with a line-setter (NMFS unpublished time-depth recorder data; C. Boggs, personal communication).

For the purpose of minimizing the incidental take of short-tailed albatross in the Hawaii-based longline fishery, the Service accepts this information as sufficient demonstration that the basket-style, tarred rope gear is an acceptable alternative to monofilament

deployed with a line-setting machine. Accordingly, under the Terms and Conditions of the Opinion, the following Condition is substituted for Condition I.B.(1)d.:

d). Setting machine with weighted branch lines or basket-style longline gear (Mandatory for Deep Sets Only): The longline must be set with a line-setting machine (line shooter) so that the longline is set faster than the vessel's speed. In addition, weights of at least 45 grams must be attached to branch lines within one meter of each baited hook. The traditional basket-style, tarred mainline gear may be used as an alternative to the setting machine with weighted branch lines. The basket-style gear must be deployed slack to maximize the speed of sinking. A setting machine with weighted branch lines OR basket-style, tarred mainline gear deployed as described above shall be employed by all Hawaii longline vessels that conduct tuna (deep) sets.

If you have any questions, please contact Fish and Wildlife Biologist Holly Freifeld by telephone at (808) 541-3441.

Sincerely,

Paul Henson
Field Supervisor
Ecological Services

cc: Charles Karnella

**APPENDIX C: Handling & Release Guidelines
for
Short-tailed Albatross
Hooked or Entangled in the Hawaiian Longline Fishery**

I. SAFETY ISSUES:

A. *Personal Protective Equipment*

1. Gloves
2. Safety Glasses (if available)
3. Long Sleeves

B. *Safe Handling Techniques*

1. Prior to handling bird, set up a cardboard box in a quiet, well-ventilated area. Place one beach towel on inside bottom of box for cushioning.
2. Working in teams of two, put on gloves and use a clean towel or blanket to cover the bird to protect its feathers from fish oil and handling damage. For maximum safety for the bird (and you), always hold the head with one hand and tuck the bird under your other arm. When holding the head, never wrap your hand completely around the neck (you could suffocate the bird). Rather, the back of the bird's head should be against the palm of your hand and your fingers should have a firm grasp at the base of the skull or bill.
3. Keep the bird's bill away from you and your partner's face and bare skin (try to hold the bird at hip-level or below for handler's safety).

C. *Safety Concerns*

1. Bills - sharp tips and edges can cause scratches, cuts, and crushing bites. Keep the bill away from the face and bare skin.
 - a. Maintain control of head, hold back of head and not the bill, do not block the nares (nasal openings).
 - b. Cover the bird's eyes to calm it down.
 - c. Wear gloves
 - d. Keep the bill away from face and exposed skin
2. Wings - can cause painful bruising
 - a. Fold naturally and gently to body to avoid injury to bird's bones, muscles, and tendons

- b. Cover and restrain with a sheet or towel, do not hold too tightly as the bird needs to naturally move breast to breathe
3. Feet - nails can cause scratches and cuts
 - a. Wear gloves and long sleeves
 - b. Cover bird's feet with sheet or towel to control movement.

II. CAPTURE AND HANDLING:

A. *Albatross Sighting and Vessel Control*

1. Fishers scan main line as far ahead as possible in order to sight albatross in advance. This scanning reduces the possibility of the albatross being jerked out of the water.
2. Do not get ahead of the main line while picking up gear to reduce the chance of fouling or running over gear and albatross.
3. Upon sighting the albatross: STOP VESSEL and PUT IN NEUTRAL.
4. Retrieve leader with albatross slowly, keeping a gentle, consistent tension on the line. Avoid tugging or yanking line quickly.
5. Ensure that enough slack or play is left in the line to keep the albatross near the vessel yet in the water until it can be determined when you can safely bring the bird on board.
6. If the bird is flying, gently pull bird on board and try not to further entangle bird in line.

B. *Retrieval of Albatross from Water*

1. If vessel is equipped with "cut-out doors," use this area to bring albatross aboard to minimize the distance from the water.
2. Lift bird on board using a long handled dip net. DO NOT USE LEADER LINE, GAFFS, OR SHARP OBJECTS to retrieve the albatross.
3. Support the bird's body weight when removing from water, do not pull on bird's neck.

C. *Handling Guidelines*

1. Review Safety Issues
2. Upon retrieval of bird onto vessel, cover bird with a towel or sheet to calm bird and reduce risk of injury to handler and bird.
3. Gain control of head.
 - a. Hold head and not bill.

- b. Do not block the nares (nasal openings)
 4. Gently remove bird from net
 - a. One person untangles bird's wings, bill, and feet from net while second person keeps bird covered and controls bird's head.
5. Restrain bird with a clean towel.
 - a. Ensure wings and legs are folded to body naturally.
 - b. Do not hold too tightly to prevent injury and to ensure movement of breast necessary for proper breathing.
 - c. Do NOT hold by soft tissue, such as neck.
6. Cover bird's eyes to calm bird.
7. Try to hold bird no higher than hip-level for handler's safety.
8. Prevent bird's feathers from becoming dirty with oils or other products as this affects bird's waterproofing, body temperature control, and ability to fly.

III. ASSESS BIRD'S CONDITION:

A. *Assess bird's condition*

1. After retrieving bird from water and removing from dip net, place bird on deck in a safe area and observe bird prior to handling further.
2. Determine if bird is dead or alive. A dead bird will be unresponsive to surroundings, unable to stand, have no blink reflex, and will not be breathing.

B. *Dead Albatross Procedures*

1. Record relevant information on data sheet and bird figures (e.g., band numbers, date, time, location, wounds, hooks, etc.)
2. Attach identification tag directly to the carcass, and attach a duplicate identification tag to the bag or container holding the carcass. Tags should be filled out in pencil or waterproof ink. Immediately place carcass in freezer. Identification tags should include the following information: species, date of mortality, location (latitude and longitude) of mortality, trip number, sample number, and any band numbers if the bird has a leg band. Leg bands, hooks, and line must remain attached to the bird.
3. Immediately contact one of the following National Marine Fisheries Service (NMFS) personnel at the following numbers (by

availability, in the order listed). The U.S. Coast Guard or the U.S. Fish and Wildlife Service’s (USFWS) French Frigate Shoals station may be contacted to facilitate communication between the vessel and the NMFS if unable to contact NMFS directly.

National Marine Fisheries Service

Lewis Van Fossen Work: 808-973-2935 extension 214
 Fax: 808-973-2941
 E-mail: lewis.vanfossen@noaa.gov

Kevin Busscher Work: 808-973-2935 extension 215
 Fax: 808-973-2941
 E-mail: kevin.busscher@noaa.gov

Charles Karnella Work: 808-973-2937
 Fax: 808-973-2941
 E-mail: charles.karnella@noaa.gov

U.S. Coast Guard - Point Reyes, California,
 Radiotelephone, Continuous Watch

Call Sign: NMC

Daytime ITU Channel	Ship Transmits (kHz)	Shore Transmits (kHz)
816	08240.0	08764.0
1205	12242.0	13089.0
Nighttime ITU Channel	Ship Transmits (kHz)	Shore Transmits (kHz)
424	04134.0	04426.0
601	06200.0	06501.0

U.S. Fish and Wildlife Service, French Frigate Shoals

Contact Frequency: 10054.0

Call Signs: KOJ638 Tern Island or KOJ639 Honolulu

4. Dead birds must be surrendered, as soon as possible following return to port, to a NMFS or USFWS office. Birds can be returned to ports on the following islands: Midway, Kauai, Oahu, Maui, and Hawaii.

C. *Living Albatross Procedures*

1. Observation Checklist - complete the following observations and record information on data sheet prior to handling bird further:
 - a. Can the bird stand and hold head upright?
 - b. Is the bird alert, responsive, aware of surroundings (i.e., does it snap at you or otherwise react to you when approached)?
 - c. Are the eyes open?
 - d. Does the bird breathe with its bill closed (i.e., no open bill breathing)?
 - e. Does the bird breathe quietly (i.e., no sounds)?
 - f. Is the bird holding its wings in a normal position up and against the body (i.e., not drooping)?
 - g. Can the bird flap its wings?
 - h. Is the bird free from visible damage? (If damaged, the wounds should be noted on bird figures)
 - i. Is the bird free of hooks and fishing line? (If bird is hooked or entangled in line, note location on bird figures)
 - j. Is the bird banded? If yes, record the band number on the data sheet.
2. Immediately contact appropriate personnel at the following numbers (by availability, in the order listed). The U.S. Coast Guard or the USFWS French Frigate Shoals station may be contacted to facilitate communication between the vessel and the NMFS.

National Marine Fisheries Service

Lewis Van Fossen Work: 808-973-2935 extension 214
 Fax: 808-973-2941
 E-mail: lewis.vanfossen@noaa.gov

Kevin Busscher Work: 808-973-2935 extension 215
 Fax: 808-973-2941
 E-mail: kevin.busscher@noaa.gov

Charles Karnella Work: 808-973-2937
 Fax: 808-973-2941
 E-mail: charles.karnella@noaa.gov

U.S. Coast Guard - Point Reyes, California,
 Radiotelephone, Continuous Watch

Call Sign: NMC

Daytime ITU Channel	Ship Transmits (kHz)	Shore Transmits (kHz)
816	08240.0	08764.0
1205	12242.0	13089.0
Nighttime ITU Channel	Ship Transmits (kHz)	Shore Transmits (kHz)
424	04134.0	04426.0
601	06200.0	06501.0

U.S. Fish and Wildlife Service, French Frigate Shoals
 Contact Frequency: 10054.0
 Call Signs: KOJ638 Tern Island or KOJ639 Honolulu

The NMFS will arrange for a qualified veterinarian or seabird expert to contact the vessel and provide treatment, recovery, and release guidance.

3. If all observation checklist questions can be answered “yes”, the bird is releaseable. However, it is strongly recommended that the NMFS be contacted prior to release so a qualified veterinarian or seabird expert can be consulted. All Release Guidelines should be followed.

IV. TREATMENT

A. *General Treatment Guidelines:*

1. If the bird does not meet the release criteria, it should be held on board for a minimum of 24 hours while the captain/observer repeatedly attempts to contact NMFS personnel.
2. Following contact by the vessel, the NMFS will arrange for a qualified veterinarian/seabird expert to contact the vessel and relay care and treatment procedures.
3. With the exception of removing entangled lines, do NOT treat, release, or euthanize bird unless directed to do so by a qualified seabird expert or veterinarian.
4. If you have any doubts about removing objects, wait until able to discuss with a veterinarian or seabird expert.
5. If the captain/observer is unable to contact NMFS personnel within 24 hours, then follow guidelines for hook removal under the Recovery Section.

B. *Entanglement in Lines*

1. Hold bird following Handling Guidelines.
2. Do NOT tug on line.
3. Using bandage scissors, cut line as close as possible to hook.

C. *Assess Hooking*

1. Note location of hook on bird figures.
2. Determine degree of hooking (light, medium, or deep - see figure of hooking)
 - a. Light Hooking: hook is clearly visible and caught in bill, leg, webbing of feet, or wing.
 - b. Medium Hooking: hook is located in mouth or throat.
 - c. Deep Hooking: hook has been swallowed and is located inside the body below the neck.

V. RECOVERY

A. *Recovery Area*

1. Place a cardboard box with ventilation holes in a quiet, well-ventilated area. Place one beach towel on inside bottom of box for cushioning.
2. Do NOT place bird in a hot or exposed area such as the engine room, near an exhaust stack, or in an exposed area on deck

3. Following assessment of condition and treatment, gently place bird in box and cover open top of box with a beach towel to calm the bird.
4. Do NOT provide food or water.

B. *Observation Period*

1. Observe bird, being careful not to place face within striking distance of bill, at 30 minutes, 1 hour, and periodically thereafter. Note condition on data sheet. Observations should be minimized to prevent disturbance to the bird.
2. Follow veterinarian/seabird expert instructions for care and treatment of bird.

C. *Hook Removal*

1. Light Hooking:
 - a. Make repeated attempts to contact NMFS for a minimum of 24 hours. If contacted, follow veterinarian/seabird expert instructions.
 - b. If unable to contact NMFS after repeated attempts within a 24 hour period, then follow these procedures:
 - 1) Remove hook by using bolt cutters to pare the hook barb and then thread the hook out backwards.
 - 2) Allow the bird to dry, drying may take anywhere from 1 to 4 hours.
 - 3) Release bird ONLY if it meets all release criteria. Follow release guidelines.
 - 4) If bird does not meet release criteria, continue to hold bird and contact NMFS.
2. Medium Hooking:
 - a. Make repeated attempts to contact NMFS for a minimum of 48 hours. If contacted, follow veterinarian/seabird expert instructions.
 - b. If unable to contact NMFS after repeated attempts within a 48 hour period, then follow these procedures:
 - 1) Remove hook - If possible, remove hook by using bolt cutters to pare the hook barb and then thread the hook out backwards. If the hook is located in such a way that prevents paring the barb, cut the line as close to the eye of hook as possible and push the hook out barb first. Observe wound sight for bleeding. Allow the bird to dry, drying may take anywhere from 1 to 4 hours. Release bird only if it meets all release criteria. Follow release guidelines.

- If the bird does not meet release criteria, continue to hold bird and contact NMFS.
- 2) Release bird ONLY if it meets all release criteria. Follow release guidelines.
 - 3) If bird does not meet release criteria, continue to hold bird and contact NMFS.
3. Deep Hooking:
- a. Deeply hooked birds will not survive at sea and must be brought in for veterinary care. If a bird is deeply hooked, contact NMFS immediately and return to port (Midway, Kauai, Oahu, Maui, or Hawaii) as directed by a veterinarian for transfer to NMFS or USFWS personnel or their authorized representative.

VI. RELEASE GUIDELINES:

A. *Release Criteria*

1. Do NOT release dead birds. These birds should be frozen and transferred to a NMFS, USFWS, or other authorized representative.
2. Every effort should be made to contact the NMFS prior to releasing a live bird.
3. Birds must meet all of the following criteria prior to release:
 - a. Head is held erect and bird responds to noise and motion stimuli;
 - b. Bird breathes without noise;
 - c. Both wings can flap and retract to a normal folded position on back;
 - d. Bird can stand on both feet with toes pointed in the proper direction (forward); and
 - e. No evidence of hooks, lines, or wounds on birds with the exception of those areas where hooks or lines have been removed prior to release (hooks and line entanglement should be noted on the short-tailed albatross figures).
4. Bird's feathers must be dry prior to release. Drying time may take from ½ to 4 hours.
5. Data sheets should be completed prior to release.
6. Photographs of the bird prior to and during release are recommended.

B. *Release Method*

1. STOP VESSEL and place in neutral.
2. Ease albatross gently onto the water, through cut-out door if so equipped.

3. Observe that the albatross is safely away from the vessel before engaging the propeller and continuing operations.
4. Note date, time, location, and behavior of albatross on data forms.

TOOLBOX:

It is recommended that each vessel have the following items on board for handling hooked or entangled albatross:

1. Cardboard Box (open top measuring approximately 4'x4'x4' [minimum size 3'x3'x3'] with ventilation holes on all sides)
2. Bandage Scissors for removing fishing line
3. Large Plastic Bags
4. Beach Towels (4)
5. Tags
6. Record-keeping forms
7. Gloves
8. Bolt Cutters
9. Knife
10. Safety Glasses (optional)
11. Camera (optional)
12. Pencils
13. Waterproof pen (optional)

**Veterinarian & Seabird Expert Contacts & Care Facilities
for Short-tailed Albatross
Hooked or Entangled in the Hawaiian Longline Fishery**

Veterinarians/Seabird Experts (contact in the following order):

1. ***Thierry Work DVM***
USGS-BRD National Wildlife Health Research Center
Hawaii Field Station
P.O. Box 50167
Honolulu, HI 96850
Work: 808-541-3445
Fax: 808-541-3472
E-mail: thierry_work@usgs.gov

2. ***Greg Massey DVM***
Hawaii State Veterinarian
Maui Veterinary Services Office
2600 Pii Holo Road
Makauao, Maui, HI 96768
Work: 808-572-3502
Cell: 808-870-4274
E-mail: VetFiveO@aol.com

3. ***Linda Elliot***
International Bird Rescue & Research Center (IBRRC)
Hawaii Office: 808-884-5576
Main Office in California: 707-207-0380
After Hours Cell Phone: 707-249-4870
E-mail: IBRRCHI@aol.com

4. ***Doug Chang DVM***
Aloha Animal Hospital
4224 Waialae Ave.
Honolulu, HI 96816
Work: 808-734-2242
E-mail: alohavet@aol.com

5. ***Ben Okimoto DVM***
Honolulu Zoo
151 Kapahulu Ave.
Honolulu, HI 96815

Work: 808-971-7180
E-mail: hnzoovet@hgea.org

6. ***Gregg Levine DVM***
Sea Life Park Hawaii
41-202 Kalanianaʻole Highway
Waimanalo, HI 96795
Work: 808-259-2535
Fax: 808-259-7373
E-mail: glevinedvm@aol.com

Care Facilities for Injured Short-tailed Albatross:

Maui Veterinary Services Office

Greg Massey, DVM
2600 Pii Holo Road
Makauao, Maui, HI 96768
Work: 808-572-3502
Cell: 808-870-4274
E-mail: VetFiveO@aol.com

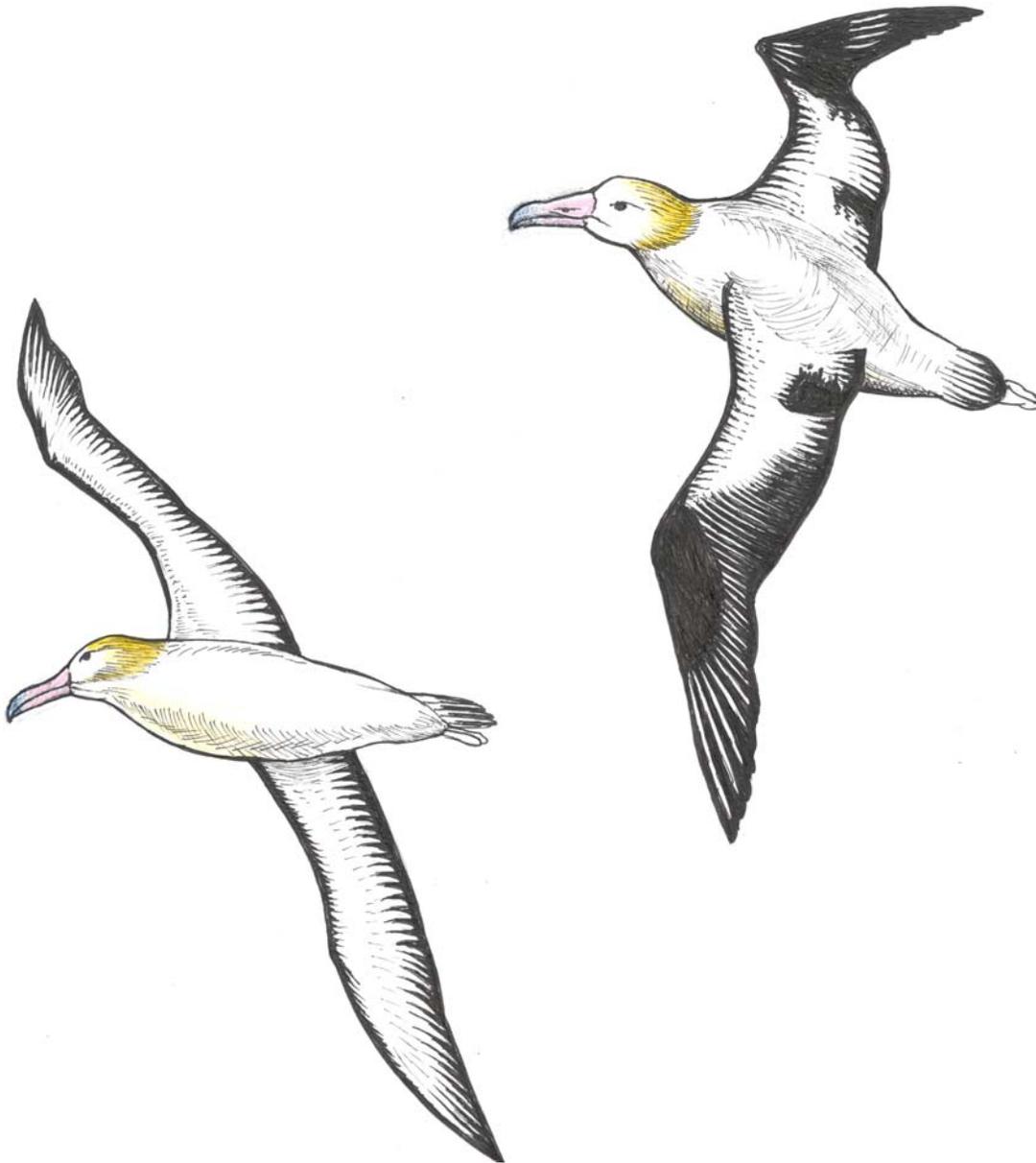
SHORT-TAILED ALBATROSS RECOVERY DATA FORM			
I. CAPTURE INFORMATION:			
Date:	Time:	Location: Latitude =	
Trip Number:	Specimen Number:	Longitude =	
Band Information: Color: Number:	Left Leg:	Right Leg:	
Bird alive at capture (circle one)? Yes No (If "No", do not fill out Sections II-V.)			
II. ASSESS BIRD'S CONDITION:			
Answer the following questions by placing an X in the yes or no column. If all questions are answered "yes", the bird may be released following release guidelines as identified in the Handling and Release Guidelines for Short-tailed Albatross.			
<i>Observation Checklist</i>	<i>Yes</i>	<i>No</i>	<i>Comments</i>
1. Can the bird stand and hold head upright?			
2. Is the bird alert, responsive, aware of surroundings?			
3. Are the eyes open?			
4. Does the bird breathe with its bill closed (i.e., no open bill breathing)?			
5. Does the bird breathe quietly (i.e., no sounds)?			
6. Is the bird holding its wings in a normal position up and against the body (i.e., not drooping or held down)?			
7. Can the bird flap its wings?			
8. Is the bird free from visible damage? (If damaged, the wounds should be noted on bird diagram.)			

9. Is the bird free from hooks or entangled fishing line? (If bird is hooked or entangled in line, note location on bird diagram)?			
III. TREATMENT			
Note wounds, hooks, and line entanglement on bird diagram.			
Veterinarian Contacted:		Date:	Time:
<i>Date/Time:</i>	<i>Treatment Administered:</i>		
IV. RECOVERY			
<p><i>Observation Period</i> (Check bird at 30 minutes, 1 hour, and every few hours thereafter; use more sheets if necessary)</p>			
<i>Date/Time:</i>	<i>Bird Behavior/Condition:</i>		
V. RELEASE (Note: Follow release criteria and guidelines as identified in the Handling and Release Guidelines for Short-tailed Albatross.)			
Release Date:		Release Time:	
Release Location (Lat/Long):			

Bird Behavior Upon Release:

Short-tailed Albatross

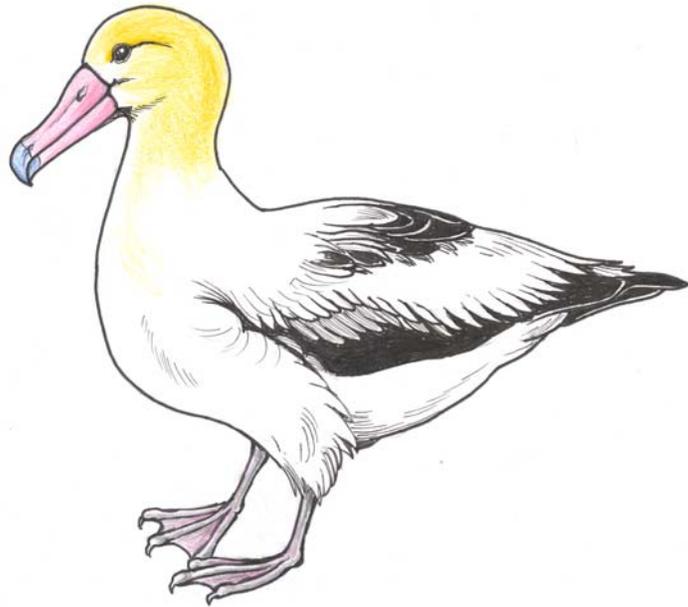
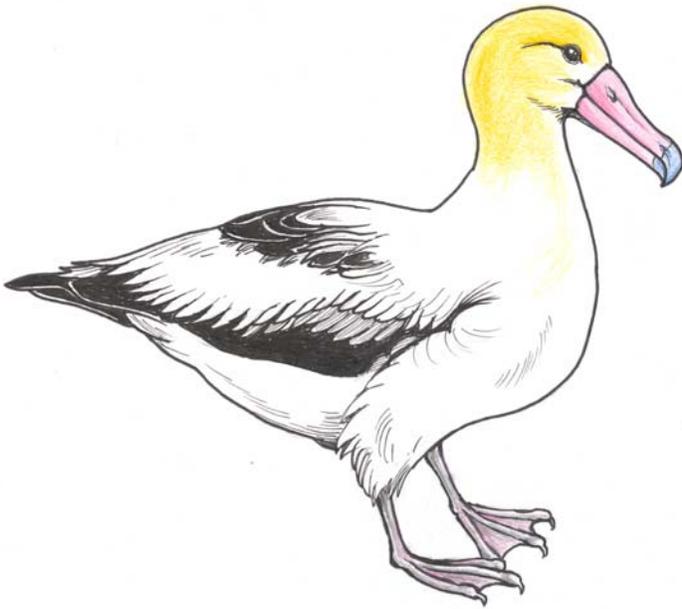
Figures for Noting Wounds, Hooks, and Lines
(circle impacted area and provide description)



Drawings by Ronald L. Walker

Short-tailed Albatross

Right and Left Side Figures for Noting Wounds, Hooks, and Lines
(circle impacted area and provide description)



Drawings by Ronald L. Walker